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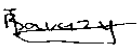
Signed 

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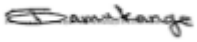
Signed  **16/06/2025**

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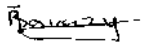
Bret Marshal Tavarwisa, registration number B212093B, do hereby declare that this dissertation is the product of my own work and has not been previously submitted to any University other than Bindura University of Science Education. All the sources used or quoted have been indicated and acknowledged as complete references.



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DEDICATION

This dissertation is dedicated to my mother and grandmother Rejoice Chari and Irene Tsiga. Thank you for your undying support and love. I dedicate this work to my siblings Aisha Nyamudo and Never. Lastly, I dedicate this project to my late Uncle Brian Nyamudo who always wished to see prevailing through and he encouraged me to pursue my studies. I thank you all for believing in me and being a blessing in my life.

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ABSTRACT

This research examines the socioeconomic impacts of flooding on the livelihoods of rural communities in Ward 12, Chikafa, Mbire District, Zimbabwe, an area susceptible to severe climate events that significantly disrupt daily life and economic stability. Through a comprehensive analysis involving quantitative data collection and qualitative interviews with local residents, the study reveals the multifaceted effects of floods, including destructive impacts on agriculture, loss of livestock, and diminished household incomes, which in turn exacerbate food insecurity and increase reliance on external aid. The findings highlight significant disparities in vulnerability among community members, particularly affecting women and marginalized groups who face heightened challenges in recovery and resource access. Furthermore, the study emphasizes the long-term implications of recurrent flooding for community sustainability, illustrating the urgent need for adaptive strategies and resilience-building initiatives tailored to the unique needs of the affected population. By documenting the lived experiences of those in Chikafa and providing insights into the socioeconomic ramifications of floods, this research aims to contribute to policymaking and the development of effective interventions that enhance community resilience and support sustainable livelihoods in the face of climate change.

Contents

CHAPTER 1: Introduction

1.1Introduction

This chapter explore much of the information on the background of flood disaster preparedness in households to verify the problem in Zimbabwe specifically in Mbire District. This chapter is going to articulate information on research aim, objectives, research questions, and significance of the study, assumptions, definition of key terms, delimitation of the study, study limitations and organization of the study.

1.2 Background of the Study

There has been an upsurge in the rate and severity of disasters in the global stage and numerous lives have been lost, property and infrastructure destroyed and some economies have been immensely impacted (Sibanda & Matsa, 2020). The rural residents of Zimbabwe have the tendency to be directly and seriously affected by natural disaster, mainly flooding and drought (Gwimbi, 2007). Flooding is regarded as one of the most devastating natural hazard all over the world, and the effects are very severe in the developing and under-developed countries where poverty can make it a precondition of people to the environment hazards and poor infrastructure and institutional capacity. Nowadays, thousands of people lost their lives, others became homeless after floods, and floods resulted in the economic losses of several hundreds of billion dollars (Twumasi et al., 2020). Climate change and growth in the number of land use lost by humans on rivers compiling the pressure of the river channel and resulting in changes in the morphology of the river the frequency and severity of flooding are increasing (Arambur U-Paucar et al., 2024).Over the past 30 years, floods have been the most devastating natural disaster affecting on average over 80 million people annually of the total number of people affected by any natural disaster globally, with floods causing economic damages valued at more than US$11 billion per year (Bhatt et al Flooding is a normal process in the hydrological cycle, which may lead to loss of lives, loss of settlements, environmental degradation and economic losses (Anumveh et al., 2023). Flooding is also one of the most frequent of various natural disasters, the consequences of which are often disastrous, with approximately 170 million people being annually flooded worldwide (Hagos et al., 2022). Direct economy losses of the floods amounted to USD 386 billion globally since 2001 (Siam et al., 2022). Such factors as climate change and the increase in the number of land use changes due to human activity have led to the severity and frequency of flooding, exposing river canals to pressure and altering

river morphology (Hagos et al., 2022). In developing nations, floods have impacted the rural development through loss of lives, accidents and huge losses in the economy each year (Gaston, 2009). Floods appear to be also a frequently occurring phenomena in Southern Africa, and studies have foreboded that it would continue in the future (Dube, 2017). The Sub-Saharan countries in the Zambezi Basin were impacted by the Cyclone Eline-related floods of 2000 which resulted in the death of over 700 people, leaving over 500, 000 people homeless and causing a net destruction of more than US$ 1 billion on the infrastructure (Dube, 2017). Floods have adverse effects on human well-being as they result in economic destruction, encouraging flood-prone areas to be in a long-term state of poverty (Siam et al., 2022). Flooding is a frequent recurring natural disaster, which is very dangerous to the communities around the world making them spread human material and even disrupt the functionality of the environment, especially in the areas that exhibit variation in climate such as Zimbabwe. A combination of geographical conditions in Chikafa Ward twelve in Mbire district like its vicinity around flood prone Hunyani River coupled by the effects of seasonal rains as well as local water dynamics presents certain chances of making it susceptible to floods. The rates of floods and their severity have increased in the previous years causing a rise in the vulnerability of local citizens (Chikoko et al., 2016). Reliance on agricultural produce is the primary cause of vulnerability of the ward to food security, livelihoods, and infrastructure which makes a good flood preparedness strategy necessary.

In the past, Mbire District has had a terrible record of serious floods years including 2015, 2019 and 2021 that led to the displacement of communities and loss of a lot of money (Munyati, 2020). Through these events, strengthening and diversification of the livelihoods of the community to make them more resistant or prepared to respond against floods was indicated because the communities that they have on several occasions experienced the same tribulation, still find it hard to overcome the effects of the floods. The perceptions of the locals towards the socio-economic effects of floods are very essential in determining the way forward in any future intervention strategies and policy changes to fit the region.

Socio-economic impacts of flooding in Chikafa Ward are not limited to the physical damage on the ground but also contains psychological impacts and disturbances of the social set-ups. Consequently, the purpose of the research is to give a close examination of the social and economic consequences of floods to the communities of Chikafa Ward and also evaluate the

effectiveness of existing coping strategies and resilience strategies. The minimum level of knowledge that will be established will allow the stakeholders to develop stronger guidelines in disaster risk reduction (DRR) in the region.

1.3 Purpose of the Study

To investigate the socio-economic impacts of floods on rural communities in Zimbabwe.

1.4 Statement of the Problem

The livelihood and welfare of rural populations in Zimbabwe, especially in the ward 12 of Mbire District in which Chikafa is found are threatened by floods. The high rate of floods in the region has left a lot of socio-economic effects, such as loss of lives, destruction of property, evacuations, and interruptions of livelihoods. Nevertheless, very little is known thoroughly about the socio-economic effects of floods in the rural settings of Zimbabwe, and also about the coping mechanisms and resiliency measures that the rural settlements of Zimbabwe use. The existence of this knowledge gap curtails formulation of effective flood risk management strategies and interventions thus contributing to vulnerability of the rural communities to onslaughts of floods.

1.5 Significance of the Study

The research is significant in that it is going to evaluate and approximate the impacts of the floods on the socio-economic livelihood of the community. The study will also determine the predisposing factors of vulnerability to the people in Chikafa Ward. More to the point, the hoped-for outcome of this study is that this study will become valuable contributions to the plans to be provided and that will be of vital contributions in designing of measures of mitigation to be used to reduce the effects of floods and the risk that comes with it.

1.6 Overall Objective of the Study

The overall objective of the study was to assess the impact of floods on the socio-economic status of livelihoods of people in Chikafa, Mbire district's ward 12.

1.7 Key Objectives

The key objectives of the study were as follows:

1. To assess the social and economic impacts of floods on the livelihoods of the people in Mbire district, ward 12.
2. To identify and assess the underlying causes of vulnerability to flood hazards of the Chikafa community.

3. To assess the coping mechanisms adopted by the community to strengthen their resilience to floods.

1.8 Definition of terms

Flooding - it can be described as an overflow or excessive pour of massive volumes of water above the usual capacity and in particular above the dry grounds forcing people to move by destroying their property, homes, other heavy goods and lands as stated in Oxford (2018).

Resilience- refers to the capacity of system, community or society, which is exposed to the hazards to resist, absorb, accommodate, adjust, to transgender and recuperate to the effects of hazard as per (United Nations General Assembly, 2016, p.22).

Disaster risk reduction - refers to the efforts put in place (historically and systematically) to examine and subordinate the causative agents of catastrophes and its intentions to avoid invention of new risks, mitigation of prevailing risks and management of vestigial risks on the premises of sustainable development methods UNDRR (2021).

Risk perception - refers to the way an individual thinks or knows about the complexity of an environment and in a bid to make an evaluation and consequently, take the most appropriate actions in order to safeguard himself. Risk will also become a different thing even to the communities that are in high flood prone areas Lemee. et.al., (2018).

Flood preparedness - the readiness and the ability of individuals, communities and institutions to deal effectively with the effects of floods as well as the ability to recover after these events. These can be put in place in such ways as early warning systems, emergency evacuation plans, flooding mitigation infrastructure, emergency supplies and resources access (Amoako & Boamah, 2020).

Mitigation of floods - this is the use of non-structural and structural measures aimed at minimizing the risks of loss and flood-related damages. Such structural measures could be in the form of erection of dikes, levees, or floodwalls, whereas non-structural measures might come in the form of land-use planning, buildings flood-proofing, and information creation (Ologunorisa & Adeyemo, 2005).

Early warning systems - refer to the mechanisms and processes that are in existence to give timely and correct information on the probable, magnitude, and time frame of an impending flood event, which information permits people and communities to take the preparatory action and response measures (Arbon et al., 2016).

Disaster risk management - refers to the procedural practice of application of administrative directives, organizations, and operational skills and abilities to secure the implementation of strategies, policies, and enhanced coping abilities of mitigating the negative effects of hazards and disaster risk potentials (Twigg, 2015).

1.9 Conclusion

This study begins by discussing the background of the research and what specifically urges the researcher to learn something about the effects of flood disaster on the livelihood of some people at household level which is the problem. This study is critical because it will assist in development of policy and aids the structures that dominates flood disaster management. As such, the key theme of the research exercise is to build resilience towards floods in the Mbire District.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

One of the natural calamities that routinely affects the rural life especially in the developing world is floods. This chapter has been written to discuss the available literature on the social and economic effects of floods on the livelihoods in rural settings across different countries of the world. The chapter begins by emphasizing on general ideas addressed by the research questions as follows flood Impacts on agricultural productivity, income sources and coping mechanisms. Third, the other emphasis of this chapter lies on the revision of various studies related to research questions on the barriers of effective flood management. The literature was wide since it touched global, regional, national and even local level in the event of trying to unearth research gap that merits this research. Explanation about both theoretical and conceptual framework, where this research was located, has also been provided in this chapter.

2.2 Flooding

Each year floods take an average of 250 life in Zimbabwe (Mutsaka, 2017). Zimbabwe was struck with Cyclone Eline on 22 February 2000 and this struck the eastern and the southern parts. This tropical cyclone occurred at a period when the main river basins, the Save in Manicaland and the Limpopo in Matabeleland South and Masvingo were already experiencing life threatening floods (UN Zimbabwe 2000). It affected 500 000 people out of which 96 000 required immediate assistance in the areas of shelter, water, food, education, sanitation and communication, transport and agricultural sectors. One hundred and six people were found dead and 20 000 became homeless (UN Zimbabwe, 2000). In Mbire, over ten people were killed because of a flood on 9 January 2015 (Share, 2015). The destruction that occurred in this surprise was of hospitals, bridges, schools and toilets. On 4 February the same year, the capital city, Harare received an amount of about 158 mm of rain. The death toll due to flooding in the year 2015 was eighteen in total (Davies, 2015). On 15 March 2019, the eastern part of Zimbabwe was affected by Cyclone Idai where districts of Chipinge and Chimanimani in Manicaland Province were the worst-hit. It is estimated that 250 000 people have been affected with some 154 dead, 162 injured, 136 being marooned and 687 still missing as of 27 March 2019.

Nott (2006:51) opined that causes of flood can be mainly classified as physical or anthropogenic like climatological forces and human intervention like clearing of vegetation and urbanization. The climatic related reasons are the most likely causes of floods and this is especially rainfall. The most globally occurred phenomenon causing floods is prolonged

rainfall events. Such occurrence is mostly accompanied by drorted periods of rain, which takes a form of days, weeks or months. Flood behavior is as well affected by human impacts in the river catchments. In specific, land use patterns affect the extent and dynamics of floods directly since the removal of vegetation cover leads to the rise of run- off and in some cases a reduction in channel capacity because of the high sedimentation rates.

It is right in stating out the fact that a flood event is not referred to as a natural hazard when it poses no threat to human life and or property (Nott 2006:54). Low-lying areas of the flood plans, low-lying coasts and deltas, small basins face flash floods are the most vulnerable landscapes to floods. Human populations are provided with transport connections, a source of water, recreation facilities, food and fertile plains by rivers and become a good place to dwell. Floods therefore become an enormous natural hazard at that time due to the dominating human population densities that occupy the land which is prone to floods. He too pointed out that, direct effects of a flood are in close connection with depth of inundation of floods water. The impact of the extent of a flood on the recovery times of crops, pastures and the social and economic impact of dislocation to the populations is directly proportional to the extent of the flood.

Nott (2006:60) also pointed that, tangible loss in floods is due to physical damage to property among other causes. These are the expense incurred due to the damage of goods and possessions, loss of service or income after the occurrence of the flood besides the cost incurred during clean-up operations. Nevertheless, not all of the effects of floods can be estimated financially as they are abstract. These are also the non-material damages such as increase in physical, emotional and psychological health complications of the affected populations of the flood victims.

2.3 Socio-economic impacts of floods

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The empirical evidence of most victims of floods in Australia said that their emotional conduct was appalling. The emotional loss caused by floods was prolonged. Subsequent research observed that half of them had not quite overcome emotional trauma of the incident with roughly a quarter of them still unable to do so. Relative factors that resulted into the non-recovery of the level were severe measures of the flooding that impacted, the level of the ensuing financial impact, age and socio-economic status. The worst affected were the aged population with low incomes whose homes were in serious floods (Flood Management in Australia, 1998:81).

Hence, a severe flood tends to have a variety of emotional cost to the flood victims, most of which are very dire. Additionally the emotional tension could last years after the incident. It is visible that communities that have flood awareness can generate less social and financial disruption as compared to the community who are low in flood awareness (Flood Management in Australia, 1998:82).

According to Lindsell and Prater (2003), social impacts have the potential to generate serious issues on the long-term operation of particular kinds of households and business within a given community. An improved knowledge about the socio-economic effects of disasters, thus will be a source of prediction and formation of contingency plans to ensure the negative effects do not take place.

It was found that, Ariyabandu and Wickramasinghe (2005:22) noted that certain populations are predisposed to floods when compared to others. Vulnerability is not only poverty but the poor are the most likely to be vulnerable since they have no options. The effects of poverty and development process on the vulnerability of people to the disaster have now been well

established. Some of the factors which influence the people in their vulnerability are their class, ethnicity, gender, disability and age.

They also observed that since vulnerability has such a significant role in the occurrence of natural hazards turning into human disasters, then it would be worthwhile to take some time to look at the nature of vulnerability. Vulnerability conditions are defined as aggregate of factors that incorporate poor livelihoods situations, powerlessness, susceptibility and absence of the ability of dealing with shocks and unexpected circumstances.

As we have already said before, poverty does not translate into vulnerability but someone who is poor is more readily vulnerable to disasters since poor people do not have the physical, social and knowledge base resources to anticipate and respond to any threats and shocks such a natural hazards. The poor people tend to become locked in a loop of vulneration. This is due to the fact that they become targets to the poor people. Since they are susceptible, they are highly exposed to a natural calamity, which leads to a catastrophe. On closer examination of the impact of the disaster, it is revealed that the susceptibility of men and women to the disaster, their capabilities as well as the choices open to them are unlike in nature and magnitude to their gender (Ariyabandu and Wickramasinghe 2005:25).

According to what is proposed by Ariyabandu and Wickramasighe (2005:26), women are not helpless disaster victims as it is commonly portrayed despite the fact that the vulnerability of the women to disasters is often more than that of men (due to traditional gender roles and relationships). Women possess good knowledge and experience on disaster management. But such strengths and abilities of women are not taken into consideration in making policy and in mitigation thus, motioning into the waste of such an important resource and in some cases resulting into dependency state. Accordingly, the lack of awareness concerning the variations of genders has resulted into the ineffective and tactless relief programs that, to the greater level, do not take into account the needs of females and their capabilities of participating in mitigation and relief activities.

Disaster effects tend to be quantified (or in other words, adding the dead and injuries and estimating material losses to houses and land, beer and corn, warehouses and burial gounds). How disasters affect people of different categories including men, women, children, aged people etc. are not necessarily paid attention. Disaster may cause changes in family size at a household level. As an illustration, the extended family network failed (the women and the

elders had no one to turn to) when floods hit Chitwan district in Nepal (Ariyabandu and Wickramasighe 2005).

The floods experienced in Sarlahi district of Nepal saw many houses destroyed and washed away in a way unable to live in. The building material affected the level of damaged by the flood (thatched-houses) (Kimbrough, et al.2007:57).

According to Sinclair and Pegram (2003:1), floods are unavoidable however the impacts of such floods could be alleviated when the devastating occurrence is known in advance. As the population expands significantly and there is parallel growth in urbanisation (primarily because of poverty) more people are moving in to informal settlements and the latter usually happen to be flood plains because there is only un-developed land available in close proximity to cities. Most vulnerable people are those who live within these settlements not only because they are located in flood plain but also because they lack the funds to cover the losses incurred in the effects of floods. The information available as early warning can thus enable the disaster managers to act in a way that might save a lot of lives and loss of property.

Smith and Ward (1998:5) confirm that the flood problem is even worse evidenced by increasing loss because of floods. On the one hand, the massive investment in flood defence cannot stop the loss caused by flood damage in most countries. Even though the majority of floods are natural events to a greater or lesser degree (although they are enhanced by human activity leading to the change of land use), the flood hazard is mostly of anthropogenic nature. Large and moderate events lead to most floods, and these events happen within the range predicted to be the stream flow. Floods are not a hazard in those cases where there has been no human encroachment into the flood prone zones.

African Wildlife: Who is to blame floods? (2000:24) also note that the net effect of increasing human activities devoid of consideration to nature has changed the recent floods into a man-made disaster of catastrophic nature.

When major floods type disaster strikes places where people inhabit them, it may cause natural disasters that include loss of life and property of people as well as major disturbance to continued working of the big city and village society. Losses due to floods are thus mere interpretation of human beings on the economic and social costs incurred by the occurrence of natural events. In part, the strength of the flood hazard will depend on the scale of the occurrences and the length of the incident. However, the actual meaning of the flood catastrophe will be largely dominated by the susceptibility of the local people. Physical

exposure and human vulnerability relationship is extremely dynamic; hence it can vary over time (Smith and Ward 1998).

According to Smith and Ward (1998), direct losses to floods are experienced soon after the incidence and they are as a consequence of physical contact of the flood waters with human beings and with destruction-able property. Nevertheless, more significant or even more important are indirect losses that are less likely to be related to the flood disaster and which usually operate at long-term time scales. Losses may be called tangible and intangible depending on whether they may or not be determined in monetary terms. The most prominent direct effects of flooding like loss of human life or subsequent ill health of the resurvivors are intangible. Instances of indirect and intangible effects of inundation are most likely high in Least Developed countries (LDCs), particularly where there are frequent and devastating floods that leave unique effects on the victims.

They went further to note that though floods have a lot of negative impacts on them, flood plains serve as a useful road and rail communication route. Even floodwaters have the potential of benefits especially as far as common property resources are concerned. Another advantage of floods is maintenance of high biological diversity in the flood plain ecology. Frequent floods that occur annually give way to a lot of water resources that are used to fill the lakes and ponds that in their turn help with irrigation or fish farming. Most of the rivers have minerals and nutrients that enhance production on the flood plain that is more intensive.

More so, it could result in massive losses in rural areas as most of the casualties are inflicted on crops, livestock and agriculture infrastructure like irrigation system, levees, wall and fences. This is to say that the primary losses are primarily associated with the impairment of the economic and social activities, primarily in the urban locations, immediately following a flood (Smith and Ward 1998).

The risk of floods is a serious issue to numerous communities and even though it is within the power of authorities to minimize the possibility and significance of flooding, the risk can never fully be omitted (Crossman, et al. 2006:41). They indicate that in UK; flood risk is a major risk to most communities. In England and Wales approximately 1.8 million households and 140,000 businesses premises are in a flood plain region, involving around 4-5 million individuals. They also note that various flood risk management activities are being carried out by operating authorities. The enlisted among them are emergency planning, raising awareness, flood warning provision and development of flood storage facilities and building and maintaining

traditional and innovative flood defences. According to Crossman, et al (2006), when such increases in risks are experienced, the simple things one provides are the reliable information and awareness to the population. The necessity of a deepened and continental cooperation between the state and the business when it comes to the flood risk management is apparent, and its extrapolation to new spheres can be observed.

Lind, et al. (2008:143) suggest that the loss in a case of flooding can take very many dimensions. Along with economic loss and the loss of life and bodily injury there will be possible discircular loss of land, of past for cultural values and loss of the natural or ecological values.

According to Kundzewicz, et al. (2002:263) argues that floods are phenomena that are inherently natural and that risks of occurrence are likely to keep increasing; one of the factors that contribute to the increasing vulnerability is increasing levels of exposure and lack of capacity. Since the beginning of human civilisation water related events like floods have been the center of concern. They keep striking generation after generation of human beings, with suffering, death and massive, ever-increasing, material losses.

They noted that despite the fact that the 21st century is proclaimed as the period of water shortage, the flood losses to the global economy keep growing to tens of billions of US dollars in property damages and thousands of human lives per annum. Thousands of years people have been living in floodplain because the soils are rather fertile there, the land is rather flat and good to build settlements, and there is a safe water. They also noted the fact that floods are natural occurrences, which had always existed and people have always attempted to place it to their own benefits as far as possible. The vulnerability of the society however to the adverse effects of flooding has continued to rise with population density, urbanization and farming activities in risk prone flood zones. With this, there has been a constant increase in the devastating impacts of floods on human settlements. One of the factors that lead to increased flood risk is economic development of the flood prone regions. Encroachment into flood plains occurs due to population pressure and also due to land shortages. The mega cities in the developed world are usually surrounded by mushrooming informal settlements that constitute the enlargement zones (Kundzewicz, et al.2002:273).

According to Bankoff (2003:224) in Philippines, flood is not presently a hazard but something that has happened over the history of the country. On the one hand, it can be discussed as the part of a broader ecological global crisis to the extent of climate change and rise of sea levels,

and on the other hand, it can also be said to be the outcome of more-local human practices. The totality of socio-economic conditions including land use patterns, standards of life, policy-related response is beginning to affect the occurrence of natural hazard like floods and disasters that are related in terms of frequency. Specifically, the cause in which flooding has become such a widespread threat to the inhabitants of Metropolitan Manila lies in the fact that it is based on a conjectured risk of interdependent factors that highlight the nature of vulnerability in which how lacking mutuality between the environment and human activity occur over the passage of time that constructs the nature of vulnerability. Based on statistical trends, it can be said that floods are increasing in number and more and more disastrous in the recent years. Indeed, events are becoming common and there is a continuous rise in the number of people exposed to the events as the environment becomes vulnerable due to human related activities like deforestation, overgrazing and urbanization (Bankoff 2003:226).

In Sunday Post (26 October, 2008: 11), Holmes indicated that the magnitude of individuals displaced by natural consequences is growing, as the negative impact of the change in climate keeps increasing. Climate related disasters are recorded nine out of ten times. Floods, hurricane, tsunamis, landslides and earthquake are estimated to displace up to 50 million people in the world every year. Yet sharp as the initial exodus may prove, the effects may be felt across generations, along with the long-term requirement of hygienic water, housing, medical and other necessities, as the inmates of hurricane Mitch in Central America in 1998 can testify with bitter experiences, and the first world countries are not an exception. Two years later, thousands of the people were still staying on temporary shelters, after Hurricane Katrina.

Hanson, et al. (2007:405) indicates that one of the great challenges that the world will ever experience is reduction of poverty. More than 50 percent of the poor in the world are in the country. The situation of poverty is aggravated by destruction of essential rural infrastructure due to natural hazards. 70 percent of all the floods felt in the whole world are felt in Asia and the annual average cost of floods in the last ten years amounts to about 15billion USD. Losses and effects have always been rampant economically and they have formed a great burden to development. According to them, new form of strategies are required to manage the financial burden cases that occur as a result of hazardous events. Floods are one of the serious threats to one of the largest deltas found in Vietnam. Flood events are a yearly incident that poses serious propensity to life and property of the community particularly to those living near the river basin. The region has undergone more flood incidences since it has a high population density and is situated in a low land.

Borrows and De Bruin (2006:1) have cited that there have been no natural hazard in which so many deaths were reported like disaster brought by floods. During 1986 to 1995 there is an estimate of about 31 percent of global economic loss due to natural hazards to be attributed to flooding, about 55 percent of all natural hazards casualties being floods. Flooding has been causing a major environmental damage and in future it is destined to increase, become widespread and even severe.

According to Douben (2006:1), since time immemorial, people have located in water-prone regions making use of the favorable geographic factors conducive to their economic inference which are accessibility (transportation) and food production (fertile land). This fact compels societies in all parts of the world to guard vulnerable assets against floods. However, flooding remains to be the most disastrous of all natural calamities and more than fifty percent of victims are flood related. Policies and measures on flood mitigations should thus be provided so that societies can become more resilient to flood hazard. 2Mirza, et al. (2003:7) reports that flood disaster affects persons, households and communities differently. Individuals deal with things differently. People who can, after being struck by a disaster, will get up quicker and those who cannot, will get deeper into the pit of poverty. Coping responses entail resorting to activities like migration out of floods-hitted regions, flood prediction, insuring of animals and crops against floods, stockpiling of food stuff, giving emergency medical care and construction of flood shelters. They have however not been integrated systematically in the approach in a bid to attain flooding security.

The fact that the approaches are developing upon the strategies of coping, and aim at locating new strategies, may intervene into social effects of flood problems effectively at a lower social and economic cost and less damaging to the environment in regard of approaches that encounter the management or control of resource basis (Mirza, et al. 2003:7).

It was found out that floods are the deadliest form of hydro-meteorological disaster in the United States (Zahiran, et al. 2008:537). Analyzing the Spatial Hazard Events and Losses Database information on the United States (SHELDUS) shows that floods have managed to kill 2,353 people between 1970-2000. The number of people killed by hurricanes, tropical storms and tornados as a combination was therefore lesser over this period. To affirm this observation, Federal Emergency Management Agency (FEMA) estimates that more than 10,000 people died in the US flood events since the year 1900. The Texas-based study has reached a conclusion revealing the fact that the socially vulnerable groups are

disproportionately affected by property destruction, injuries, and loss of life due to physical effects of disaster. The social factors that lead to the variation in economic classes under a disaster and the observed variations in the vulnerability to the disaster are economic deprivation, low human capital, poor access to social and political resources, residential preference, and evacuation processes.

According to the Brouwer, et al. (2007:313), Bangladesh is a very flood-prone nation. Eighty (80) percent of the country is covered with flood plains and other few other small rivers. This is a large floodplain region and a majority of the people are some poor rural people. Every ten (10) years approximately one third of the household is severely flooded and in catastrophic years like 1988, 1998 and 2004; the proportion of the country flooded was above 60%. Social upheavals such as floods led to shortage of drinking water as the surface water became polluted.

The instances of diarrhea, cholera and other infections exhibited conspicuous increment during and after the time of floods. The climate change that has been occurring over the last decades has increased the amount of rainfall which has aggravated the problem of the flooding. The poor people are the worst victims of flood disasters and they are also least able to make up the loss of property and income (Brouwer, et al.2007:314).

Another research conducted in Southeast Bangladesh in 2005 confirms that there exists a positive correlation among environmental risk, poverty and vulnerability. The poor members of society live nearer to the river hence, they are exposed to a greater risk of flooding, and consequently, they are more exposed. Income disparity and accessibility to natural resources is also synonymous to environmental risk exposure (Brouwer, et al.2007:324). Families residing closer to the river apparently lack the chance to be involved in the numerous economic actions that predispose them to the attack of natural calamities and which possibly leave them catching in the poverty chain (Brouwer, et al.2007:325).

According to Dixit (2003:156) flooding in Southern Nepal causes major social as well as economic disruption of lives. The large sediments carried by the rivers are deposited on the farmlands, which causes destructive effects to productivity. These floodplains (vulnerable zones) are inhabited mainly by the poor people who do not get a chance to dwell in lower vulnerable zones. Annually floods kill, destroy the fields under cultivation and irrigation, bridges and post-rural facilities in Nepal. He suggests that policy makers, donors and relief and development agencies consider the phenomenon of flood disaster as separate occurrences, which interrupt the flow of normal livelihood. Unless disasters are caused by natural

phenomena, most of the measures taken to control the impact of the disaster are adhoc measures taken on the assumption that an emergency support in the form of relief will tide through the situation of need. The support is meant at ensuring that the situation is the way it was prior to the disaster. Government, donors and non-governmental organizations have been known to react in the same measure on the flood disaster when it happens to be experienced by the same population every year by giving the same relief and rehabilitation services. This method ignores the scenario of a society in regular situation in between two hazardous incidents. Disasters are taken into consideration as a coincidence in the interference of society abroad by a hazard. Research indicates that disasters should be seen to be a product not only of natural hazards but also of social-economic systems and process of political making in which individuals and families end up being susceptible (Dixit, 2003:166).

Further analysis by Dixit (2003:167) indicates that the vulnerability of a person or a group of people is their descriptive condition relative to their ability to predict, respond, resist and revive to the effects of a natural hazard. The ordinary times bring people to even vulnerable conditions. The families and vulnerable conditions experience the greatest difficulties in the rebuilding of their livelihood because of a disaster. It is not the lack of awareness of hazards or the mistaken view of risk that makes the families live in conditions prone to disasters. Rather, a majority of them have very little choice on how and where they reside. This means that vulnerability is not a given but a dynamic process which is loss dependent on the social, economic and political environments which are subject to change with time, and hence, leading to a change of loss probability. Conversely, he opines that the enhancement of resilience capacity would lessen the social vulnerability. The situation during normal times that is characterized by social, political and economic situation and their interactions define why some sections of the societies are more prone to disaster as compared to others.

According to Smith (1996:225), both human and technological and natural disasters influence a considerable percentage of persons either directly and indirectly. Regardless of the terrible effects caused by disasters, they offer a rare chance of examining how coping may become involved in stressful conditions and situations. In summer of 1993 flooding occurred in upper Mississippi Valley in the United States. The flood provided the chance to learn about some critical questions concerning the role that coping in disasters can serve. First, does coping matter as to outcomes? Given that the impact of disasters is so displacing and mammoth, do coping strategies of people make a difference on how people eventually cope with the ascent of disasters? Second, in case coping has a difference, what are the consequences of the various

coping strategies? Third, what is the relationship between coping and some of the other aspects that could affect the outcome of the disaster? Which variables matter in a consideration of the role of coping in disasters? Fourth, what is the variation of the influence of coping in various types of results? As an example, is there a difference between the impact of coping on psychological-physical health? All of those questions have been developed on the basis of past research done.

Although there is always an overwhelming feeling of disasters, there is an increasing body of evidence that coping can be a big factor in determining how the given individuals will fare (Smith 2008:226). The worst flood that ever hit Bangladesh last was in 1998 as described by Rashid (2000:240). Nearly two-thirds of the nation were under water and millions were hit. There were 33 million individuals that were marooned out of which 18 million required urgent health and food supplies in 52 districts. More than 65 days were spent on the floods. Their destruction was in terms of basic infrastructural facilities such as roads and bridges, homes, crops, livestock and cows. The worst thing associated with the flood was the loss of income that people got. The flood relief effort involved feeding, medication and clothing of poor people.

In the worst hit regions, boat transport replaced it as the main mode of communication and most slum dwellers resorted to life in shelters and relief camps as the floods inundated huge parts of their regions or alternatively set up arrangements in their residential homes to cope with the flood waters. They were not willing to relocate because they did not leave their domestic products. The event of the floods of 1998 well demonstrated the hopelessness and sheer helplessness of the people, who had no houses to live in, and all the property was ruined and had nothing to buy food. The floods devastated their lives thoroughly. (Rashid 2000:244).

As indicated by Rashid (2000:245), the worst off during the disasters are women and children. The women in the 1998 floods used to share stories on how they struggled to access basic sanitation since most of the latrines were covered by the floods. They had to come to an extent of taking some desperate actions in order to tackle the situation. Some of the women said that they had to walk miles with other female relatives or even organize boat trips with them to go to some other locations that were not flooded to go to the latrines.

In these floods nearly the whole flow of the wells was overridden by the floods. Some women were able to survive purchasing water in the possession of people with deep wells. They mostly affected children with diarrhoea since many of them out of boredom swam in the dirty flood

waters to get relief items and some of them played in the dirty water even drinking and bathing in it. A part of the people affected got skin and fungal infection in their legs and feet because of dirty flood water. More so, frequent cases of diarrhoea, fewer, coughs, cold, other skin infections and even cases of jaundice were reported in large amounts. (Rashid 2000:247).

Mustafa (2002:94) says that even in spite of the enormous investment Pakistan has done in the area of water, it continues to be vulnerable to the flood hazard. In 1950, 1956 and 1973 there were other huge floods in Pakistan which claimed the lives of over ten thousand people. Other huge floods were in 1976, 1988 and 1992 which had more than ten thousand people. The floods that took place in 1992 piled even above 3 percent of the entire GDP of the nation. As the study conducted in the four villages in Central Pakistan reveals, the residents blamed their weaknesses to floods on poverty, God, socio-economic powerlessness and Government (Mustafa 2002:100).

According to Ninno, et al., the severe damages to rice crop aided by the floods that were so massive in Bangladesh in 1998 posed a threat to food security of tens of millions households (2003:1221). The government food transfers to the affected people also contributed to the limiting of effects of the flood on the access of households to food. This resulted in tremendous crop losses, other assets loss and reduced employment opportunities hence the loss of household income and market prices (Ninno, et al.2003:1224).

Contend that, Carey (2005:122) allege that the human populations around the world are susceptible to natural calamities. The extent of the effect of natural disasters on the homes and livelihood of people may be influenced by certain conditions which may include geographical location or the level of income of people. Gao, et al. (2007:27) opines that despite the water shortages that usually capture the headlines sometimes, floods have remained the worst of the natural nature disasters in China. This comes even after massive development in the construction of structural engineering works in flood control.

The devastating Yangtze and Songhuo river basin floods in 1998 affected almost every one Chinese in a direct manner. Erosion in watershed and the careless reclamation of lakes obviously contributed to the severity of floods. Even though more lives were not at a risk as in the case of the previous floods, the communities living along the major rivers and lakes of China were in a disproportionately precarious position regarding the flooding phenomena.

They report that in the historical records have shown that China has experienced an average number of about once every 2 years through flooding disaster. Alternatively, the widespread flood in 1931 caused the death of nearly 400,000 individuals in eight provinces.

Mohapatra and Singh (2003:131) suggest that floods are the commonest natural disaster to be experienced in India. Approximately 33 million persons have been hit by floods with an average of 5.5 million people in a year between 1953 and 2000. This number could have been increased because of the increase in population. Based on the above discussion at the global scale it is apparent that the floods have negatively affected the lives and livelihoods of the people. The African continent has not avoided the floods. Under UNEP (2006), it has been established that compared to any other continent, the continent which comprises about one (1) billion people is the most vulnerable to climate change. The number of people hit by disasters in the final decade of the 20 th century was almost two (2) billion. Floods and droughts accounted to 86 percent (86%) of this.

Vast amounts of rainfall destroyed houses and crops leaving entire communities in vulnerable positions. Flooding that is increasing in Africa is exacerbating health hazards of the millions of population. In early 2008 Southern Africa was plunged into an increasingly deepening humanitarian crisis, as major floods killed dozens and displaced thousands.

As Du Plessis (1988:11) remarked, floods in 1983, 1984 and 1985 successively had been plaguing the farming industry in South Africa in particular. The domestic market had to be supplied with various farming products that have to be imported. Moreover the grazing capacity was found to be decreased so that some of the stock had been forced to be thinned till there were no but the studs. The resultant effect was that farmers lacked proceeds in some of these regions and consequently accumulated debts inevitably. The declining income of farmers had implied that they had spent less on farming equipments, sown less and bought less fertiliser. This on the other hand had given rise to excess production of some of the needs of farming and also chemicals that had created the need of creating rationalization in those industries.

In 1986/87, floods resumed again and affected the farmer and the consumer negatively by impacting directly on them and had also caused the infrastructure of the river towns to seriously be damaged. Farmers had lost stocks and irrigated land and farming equipment, plantations and sheds along the rivers, houses bridges, roads and railway lines, telephone connection and dams were also destroyed. Drinking water supply had been disrupted in most areas and besides taking

the special steps that had to be undertaken in this regard, there was also the need to institute health preventative measures (Du Plessis 1988).

According to Lithacasty, Nxumalo (1984:2), it is not only that the South Africa was impacted by the South Africa economic recession, but was also hit by an economic stagnation as a result of effects of natural hazard like floods because the Government had to devote funds to tackling the effects of floods.

According to Snoussi, et al, it has been identified that there will be serious consequences of climate change and raising sea levels which will affect the natural environment and also the human society in the coastal areas (2008:206). In the case of Morocco, coastal zone is one of the principal socio-economic regions of that country comprising of an over 60 percent of the population being located on the coastal cities in addition to embracing 90 percent of the industry placing them in greater risk of flooding.

Parker (2000:188), lamented that floods pose immense natural destructions to life, health and population in most African states. Their settlement and exposure to activities to floods can be partly attributed to the significant position held by flood plains in the African societies and economies as well as the state of societies and their ability to put up their resistance against a disaster. Moreover, there exists a significant feedback relationship between degradation of the environment created by the African societies and preponderance to floods danger and tropical storms. We find flood plains to be a very crucial placement of any settlement almost all over the world and this is no exception in Africa. He explicitly states that even though the regional settlements could have avoided the flood-prone places, the resulting settlement developments have resulted in the development of floodplains. As an illustration in Egypt, the rive Nile floodplain is the highly populous area of the country and by comparison it occupies the rest of Egypt which is practically inhabitable. Mozambique has at least twenty cities and towns that face imminent floods such as the main settlements along the Zambezi and six locations in the coast.

Local communities over the centuries have established practices to use the floodplains in the African continent to their advantage and not only because of the encroachment of water but as a result of yearly deposits on the land in the form of sediments after the flood, contributed by the flood waters, and these have become vital to the local economies and societies (Parker 2000).

Parker (2000), too, states that the destructive influence of flood over African societies is not simple. The extreme events impact both formal and informal economics and thus it is not easy to determine the impacts that comprise of both direct and indirect impacts. Structural damage of homes, shops and public buildings, contents of these buildings and loss of crops and livestock are the most tangible types of damages induced by floods. Buildings can get destroyed completely or partially depending on the building quality and the event intensity by flooding.

The reported cases of homeless persons after floods are higher than in any other case due to the fact that dwelling to rain and flood is very weak. Most of the times, floods will result into significant loss of infrastructure such as destruction of roads, railway, airports, supply of electricity, water and waste manage system. River bridges especially are vulnerably open to destruction and due to this, transportation systems are affected. The financial impacts of floods are many times more than the flood itself (Parker 2000).

Parker (2000) indicates that there are always food shortages post-flood since many times floods destroy crops and livestock. As an example, the floods in Sudan of 1988 triggered an imminent food shortage. There are various ways floods can intervene with the food supply. Storing spaces need to be dry to avoid damage to food stocks. Food transportation is normally hampered by serious flooding and there is likely to be shortages of food supplies in the areas that have lack of food mainly in towns where supply sources are cut off and where food supplies are within inadequate.

An excerpt of extreme floods is the 1988 Sudan floods. The unexpected and instantaneous flood of the White and Blue Nile which was contributed by the unexpected torrential rain fall brought massive damages to properties and human tragedy. In the province of Khartoum alone, food production was reduced by least sixty percent and damages also swept within the infrastructure such as the water systems, sewage system, irrigation canals, roads and electricity. There were their significant losses in agriculture which is the major economic activity in the community. _Disaster Risk Management. The Study Guide of DIM 605: Module 2_.

OCHA (2008) highlighted that the total population, who had been affected by rains and floods in 2007 in Southern Africa had exceeded 194,103 persons. These were 60,995 in Malawi (the majority were property and crop damage), 94,760 in Mozambique (all were evacuated to resettlement camps) and in Zambia, more than 16,680 people were affected (1,890 persons were moved into temporary accommodation) and the rest stayed in host families and in

Zimbabwe, 15,168 persons. Lesotho and Swaziland were the two other countries where it was estimated that another 4,000 and 2,500 persons respectively had been affected.

In 2008, thousands of people suffered following the flash floods that covered hundreds of hectares of agriculture land in the north-eastern part with hundreds of families displaced in the area. Their food security and livelihoods were interrupted by the farmlands that benefited some 1,200 farmlands (IRIN 2008).

According to Theron (2007) at least twenty countries in Africa experienced floods. Such countries were Algeria, Berlin, Burkina Faso, Cote dIvoire, Ethiopia, Gambia, Ghana, Guinea, Kenya, Liberia, Mali, Mauritania, Nigeria, Rwanda, Senegal, Sierra Leon, Sudan, Togo and Uganda. The floods were believed to have killed about three hundred (300) individuals in twenty (20) countries and the reason was the inaccessibility of affected areas since the number of individuals killed most certainly did not reflect the actual figure.

The floods were associated with numerous socio-economic and political implications that led to emergence of numerous complex issues. The direct aftermaths were the displacement of the population, destruction of civilization like houses and roads, destruction of the crops and cattle and loss of livestock. Roads and other infrastructure were also destroyed interfering with the on going development projects and political procedures (Theron 2007).

Long-term food insecurity led to the immense causality of farms, crops and livestock which he observed. The flood in Ivory Coast was quite near to harvest time and this made it an even bigger loss, as farmers had not much supplies of harvested food stocks in the past season. The fertility of soil was also lost due to floods that reduced future harvest. More in the long-term the spread of infections and water borne diseases, cholera, dysentery and diarrhea had to be addressed by affected areas who had to provide safe drinking water and also water purification tablets.

He proceeded to note how the population displacement and infrastructure destruction renders African societies disruptive in their developmental consequences and the realization of most millennium development goals such as the destruction of schools in Uganda resulted in at least 100,000 children lacking school.

An analysis carried out on poverty, Vulnerability and Discaster the effects of flooding in the Limpopo Province in South Africa states that although most people may be affected by the disaster and contribute significantly to vulnerability, it is poor people that are pushed to be

vulnerable by a net of circumstances which puts them in danger of being affected by the disaster (Khandlhela and May 2006:276). In their study they were able to prove that the community and large and the impact of floods on various households is different, this made them conclude that the vulnerability of the effects of a flood disaster is actually a product of an interaction between socio, economic and political process.

According to Adamson (1983:24), disasters like floods that affect the southern part of Africa have led to loss of lives, huge damages to property, crops and livestock, as well as communication disturbance. Such events may not be so risky anywhere in the sub-continent; but throughout the entire sub-continental space their occurrence have been historically quite often.

The emergency which occurred in Laingsburg in the month of January, 1981 has been termed as the biggest Natural Catastrophe to have hit the country of South Africa. A large portion of the town was swept off by the flood waters and 100 lives were lost. Along with loss of life there was much damage which was mostly on bridges and irrigation schemes. The central part of South Africa suffered the terrible impact of the heavy African rains in January of the year nineteen seventy- four on agricultural economy.

Based on the literature reviewed, it is evident that the growing population of this planet is creating a situation where there is an escalation of the risks of people and property being exposed to dangers of the flooding. This statement is corroborated by the results of the study establishing that the number of people who inhabit the river banks in the study site has gone up over the years and has exposed them to the floods. As our population rose on Earth, it can be assumed that climate change will also worsen this. The world is currently lacking adequate and viable measures to curb the expanding probability and effect of flooding. The evidence supporting this is that there is the growing threat of flood, and there should be constant vigilance so that the facility is followed up and enhanced. There must be an application of risk management in human society in order to coexist positively with floods. As a matter of fact, floods cannot be completely done away with in reality. Nonetheless, negative effects of floods could be reduced through proper behaviors and activities. The effective flood risk management requires active contribution of all who may be affected by the consequences of flooding, those immediately threatened, the civil authorities and the society and its leaders.

According to the literature, the socially vulnerable or disadvantaged households are less prepared in the case of disasters. Risk of a flood will become significantly higher in the

following years due to not only climate effects but also because of the trend to the further development of the socio-economic situation.

Additionally, it is evident that majority of flood research admits that floods have been disastrous to human beings. The studies have however been inclined to discuss the subject matter based on the objective of the study. This review of the literature indicates that the impacts of the longer-term floods that sales have on communities, are highly documented in a different manner.

2.3 Theoretical Framework

The Theoretical Framework that it is possible to identify to guide this study is the Disaster Risk Reduction Framework. The systematic process of formulation, implementation and integration of policy, strategies and practices in a bid to eliminate vulnerabilities and disaster risks in a community, in order to prevent (prevention), mitigate (through mitigation and preparedness), or limit the various impacts of a hazard against the broad spectrum of sustainable development can be considered as Disaster Risk Reduction. As shown in the introduction, climate change has raised the occurrence and the intensity of natural disasters especially floods. There may then be no hope to get rid of the threat of floods completely. Therefore, the due diligence in terms of comprehending the risk of floods and types of consequences within the rubric of Disaster Risk Reduction cannot be overestimated. This could be achieved by the development of profiles on flood hazard and risks that can be utilized to develop appropriate measure to reduce and manage effects of floods among the rural communities and the enhancement of the capacity and resilience of the community (Report on the Regional Stakeholders Consultative Workshop on Disaster Risk Management, 2004).

Although the frequency and magnitude of occurrences have risen, there has been no study that has been conducted on the comprehensive impact of the socio-economic livelihoods of the rural population. This is why the reaction to the effects of such hazards as floods is not efficient. It is consequently necessary to shift a proactive risk and vulnerability approach other than the reactive one to Disaster Reduction and Mitigation in the country. This holds true with the Hyogo Declaration as well (ISDR, 2005).

Figure 2.1: Disaster Management Cycle source: (Manogale 2011)

2.4 Contribution of local institutions to effective flood management

The local institutions around the world have a major responsibility as regards to effective flood preparedness by adopting various measures that promote flood preparedness. This has become more of interest over the past years, with researchers and policy makers implementing the need to have community level involvement and assistance in regards to facilitating resilience to natural disasters like flooding. 7, 8, 3) has looked at the forms that local institutions, including community based organizations, non-governmental organizations (NGOs) and local government authorities can play a role to enhance successful flood preparedness at the global level.

One of the ways through which local institutions may help in the effective preparation toward floods is by playing their role in mobilizing local communities toward disaster risk reduction efforts and the participation of local population into the preparedness processes and activities. Local institutions are usually informed and well aware of the specific needs and weaknesses of their communities and can thus develop the strategies to improve the preparedness to floods (Jha et al., 2020; Bhatt et al., 2021). It can involve the implementation of the community-based early warning network, education and training on flood hazards and corresponding precautionary response, in addition to supporting the development of locally-defined disaster plans (Cao et al., 2022; Dube et al., 2023). In addition, local institutions may serve as the key

element in closing the ever-existing gap among global and national flood preparedness policies, and the realities of local communities (Lassa et al., 2020 and Saha et al., 2021). Through ensuring that needs and concerns of the local communities, and through providing feedback and the knowledge and insights to policymakers, local institutions can play a role in making sure that the global and national-scale flood preparedness strategies will be more responsive and effective (Pandey et al., 2022 and Yadav et al., 2023).

To a greater extent, the local institutions play a role in effective flood preparedness since they are familiar with and know how to use the local sources of resources and networks as well as the social dynamics needed to effectively implement the flood preparedness (Mohanty et al., 2020; Gupta et al., 2021). This will involve enlisting local volunteers and organizing relief work and the fair allocation of resources and assistance to vulnerable populations (Chatterjee et al., 2022; Majumdar et al., 2023). One of the valuable concepts is that local institutions can help in efficient preparation against flood at the global scale because they are already establishing a rapport with the members of the community and they are quite familiar with one another. Local institutions can become a key tool in making communities more resilient to flooding impacts through community outreach and engagement, the reduction of the disconnect between policy and practice, and the use of locally available resources and network (Mohajerani et al., 2021; Saroha et al., 2024).

Over the past years, much attention has been accorded by the researchers and policymakers to the contribution of local institutions in making the region prepared in case of floods. The community-based early warning systems, education and training and facilitating development of disaster management plans, articulated by (Alam et al., 2021, Bhatt et al., 2021and Cao et al., 2022) were some of the ways in which the building resilience and mitigating the consequences of floods at regional scale contributed to ensuring that the community would attain a satisfactory degree of being prepared to face any disaster such as floods. Local institutions bring on board the local communities into disaster risk reduction and preparedness activities with the aim of making the local community members own up all activities that may be undergoing in the community. Community-based organizations, non-governmental organizations NGOs, local government agencies are usually more aware of the current needs and vulnerabilities of their area, and they can come up with specific strategies to increase regional preparedness in floods, (Jha et al., 2020 and Chatterjee et al., 2022). This may entail, among others, planning of community based early warning systems, training and educating on risks and response techniques to floods, and support in regional plans on disasters management,

(Dube et al., 2023; Majumdar et al., 2023). More to the point, local institutions play a bigger role in closing the gap between the national-level flood preparedness policies and the realities of local communities on the ground at the regional level, (Lassa et al., 2020 and Saha et al., 2021). Local institutions can contribute in the process of making regional-level flood preparedness strategies more responsive and effective, (Pandey et al., 2022 and Yadav et al., 2023) by incorporating needs and concerns of local communities, and explaining and giving feedbacks to policymakers.

The familiarity of local institutions with regional resources and networks and the character of regional societies enables them to support the proper implementation of flood preparedness policies, (Mohanty et al., 2020 and Gupta et al., 2021). This may involve the mobilization of volunteers, the organization of relief efforts, the fair allocation of resources, and the provision of them to vulnerable groups in the region, (Cao et al., 2022 and Mohajerani et al., 2021). Besides, local institutions may be instrumental in promoting cooperation and coordination among various stakeholders at the local level, including local governments, Non-governmental Organizations, and community-based organizations and all line ministries with the aim of collaborating in improving flooding preparedness. This will require the promotion of knowledge, resources, and best practices sharing between local institutions, which can increase the overall effectiveness of regional flood preparedness activities (Kelman et al., 2022 and Saroha et al., 2024).

The general issue of improving flood preparedness at national levels has been of more interest to researchers and policymakers over the last few years particularly by the input of institutional roles de minimus. Noting that there are different ways in which local organizations and institutions can invest in the development of resilience and reduction of the effects of floods locally and nationally (Alam et al., 2021, Bhatt et al., 2021 and Cao et al., 2022). More than that, local authorities mobilize involving local communities into disaster risk reduction and preparedness measures to make them conscious and alert of the information on the flooding. The local institutions, including local government agencies, community-based organizations, NGOs, etc., are aware of the peculiarities of the needs and vulnerabilities of their communities better, and thus they can create strategies to promote flood preparedness in the country on a macro level, (Jha et al., 2020 and Chatterjee et al., 2022). It may involve arranging community-level early warning mechanisms, offering training and instruction on floods-related risk and contingency steps, and enabling nations to build national disaster management plans, (Dube et al., 2023 and Majumdar et al., 2023). Since local institutions may be an excellent way of

bridging the gap between flood preparedness policies at the national level and local communities, (Lassa et al., 2020 and Saha et al., 2021).

Local institutions play a significant role in terms of using their expertise on the national resources, networks, and social dynamics to manage the process of successfully deploying flood preparedness actions, (Mohanty et al., 2020 and Gupta et al., 2021). This may involve recruiting volunteers, organizing relief programs and guaranteeing proper allocation of resources and assistance to the vulnerable populations of the country, (Cao et al., 2022 and Mohajerani et al., 2021). Moreover, it is also possible that local establishments can facilitate interaction and cooperation between various stakeholders on the national scale including local authorities, non-governmental organizations, and community-related organizations as it will assist in alleviating workloads and allowing duplication of the same projects in the same community hence which will result to their equal distribution of the resources.

Flood preparedness at community level, particularly Chitsungo community, is significant at the local institution. This is increasingly becoming a subject of interest towards the researchers and policymakers in the recent years hence various measures have been put in place in order to equip the communities to that effect so far as they are prepared to respond in cases of flooding. Such contributions that can be made by local-level organizations and institutions in the context of the construction of resilience and the reduction of flood impacts to this particular community include resource allocation, education, and training, (Dube et al., 2023 and Mohajerani et al., 2021, Majumdar et al., 2023). Their capacity to mobilize and involve the local community in raising awareness in disaster risk management and risk reduction is local institutions in Chitsungo. Community-based organizations, NGOs, and local government agencies (local institutions) can be familiar with the special needs and weaknesses of the Chitsungo community and create custom plans to improve flood preparedness, (Lassa et al., 2020 and Saha et al., 2021).

Mavhura et al., (2017) point out that Chitsungo community in Zimbabwe has also been the object of study regarding the role of the local institutions in preparing against floods. These studies described the work which are being undertaken by the government agencies, community-based organizations and traditional leaders in the formulation and practice of the flood preparedness measures as flood evacuation plans, early warning systems and disaster risk reduction measures. As such, the programs of such local responses and the lack of institutional

coordination and community involvement are still developing issues in research, (Mavhura, E 2021).

2.5 Chapter summary

Globally, high frequency, intensity, magnitude and pattern of flooding disaster are being experienced even more than ever before to various households in various communities endangering the advancements of the future generations. The flood disaster had negative effects on the various households established in the literature reviewed such as loss of lives, damaged property, destroyed infrastructure, injuries, psychological effects and even disruption of the working of the environment to mention but a few. This demonstrates that there is a research gap within the literature that requires to be filled up to develop flood resiliency within the community.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter will describe the research methodology that was employed to carry out research to understand negative effects of floods and coping mechanisms that the rural people of Zimbabwe observed. The chapter reports the research design, data collection procedures, sampling plan, data analysis procedures as well as ethical consideration.

3.2 Description of the study area

The research was carried out in one of the wards in Zimbabwe (Mbire District) which is called Chikafa. It is located in Mashonaland Central Province in the Northern side of Zimbabwe. The district is situated some 250 km north of Harare towards the Zambian and Mozambique boarder. It also has a common boundary with Zambia Luangwa district to the north, Mozambique Tete province to the northeast, Muzarabani district to the east and the Guruve district to the south and west is Chiwore safari area in Hurungwe district. Mbire District constitutes a total of 17 rural wards and with total areas of 4,695.87km2. The district was selected as the area of study because there were high cases of natural and hydro-meteorological disasters like flooding that caused serious disturbance of the functioning of the environment, wide spread of material, loss of property, loss of lives and destruction of infrastructure and socio-economic effects to the community households.

The Mbire District fall within natural region Va that has extensive farming and low rainfalls estimated to about (650mm). They receive an average of 450-650mm rainfall annually and the mid-day temperature ranges between TC 20 Degrees Celsius to 29 Degrees Celsius due to rains that are caused by global warming accompanied with very hot dry spells hence making it one of the driest districts in the country. There are some areas within the district where flooding is prone areas and since these areas are on the rivers these areas are called low-lying areas like ward 1,2,3,5,9,11,12,13,14,15, and 16. These are also areas of concern, which have flooding problems; such areas are; Musengezi, Chidodo, Kasemberere, Kanyemba and Chitsungo. The district is mostly characterized with extreme droughts and dry spells in the middle season and therefore qualifies to have livestock productions since such is enhanced by the cultivation of fodder crops. The sources of livelihoods of the district include, crop production, livestock production and cattle ranching, wild foods. In addition, the Mbire District is considered as one of the remotest and least developed districts in Zimbabwe despite the personal of the rich natural resources (wildlife) that the area is blessed with. The poor road infrastructure and means

of communication is also a good evidence of this underdevelopment. Clay, loom and sandy soils, vulnerable to flooding are the characteristic soils of the district to their impermeability and general lack of vegetation cover.

The target population was drawn from Mbire District population. According to the ZIMSTAT, (2022) statistical report, Mnire District consisted of a total population of 83720 people comprising of 41 012 males and 42 708 females residing in the community. The 2025 District profile report shows that Chitsungo community has 1 488 households with a total of 6 119 people. Also, the report form the Mbire District profile shows that there are more than 10 Non-Governmental Organizations mainly focusing on the humanitarian assistance, such as education and awareness on climate change, water, sanitation and hygiene programs (WASH) and capacity-building to enhance flood resilience. The reasons for the availability of these NGOs are because, it is high flood prone area.

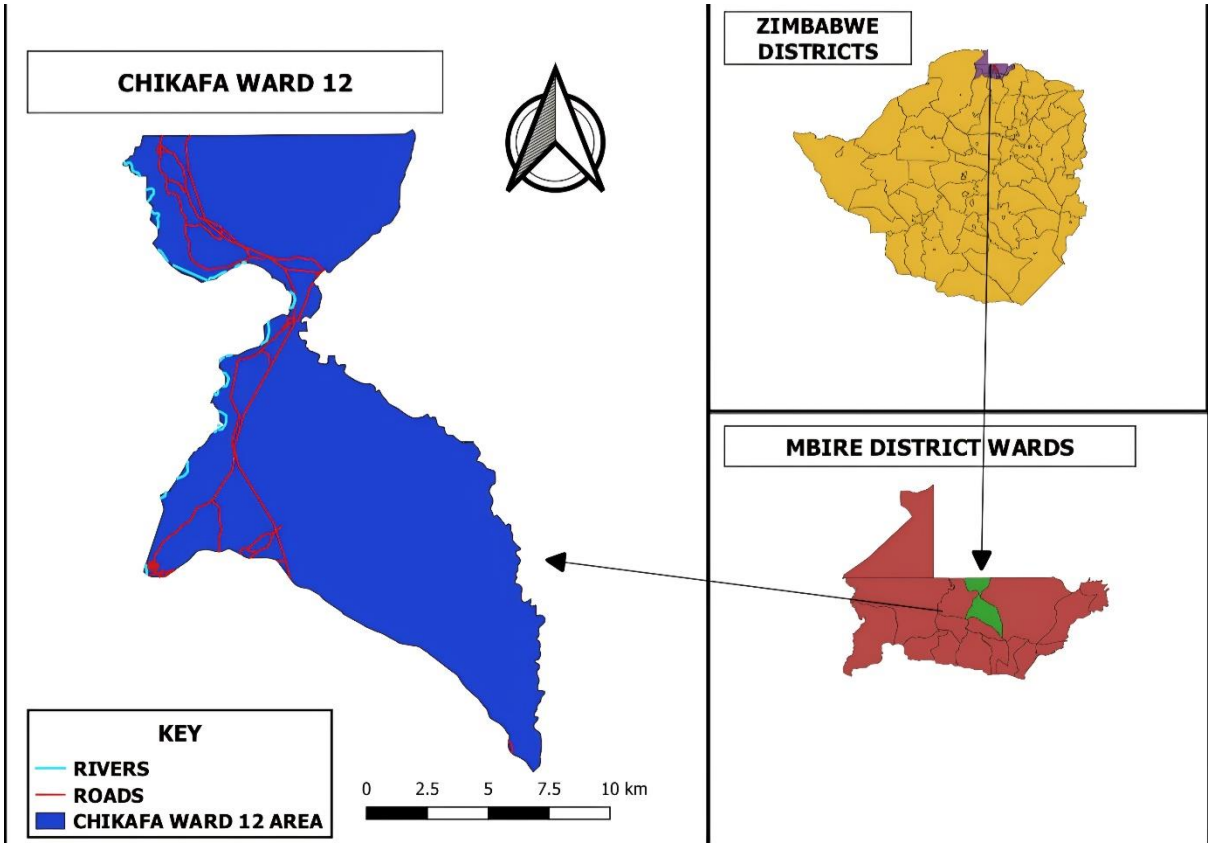

FIG 3.1: Mbire District Chikafa community ward 12

3.3 Study Design

According to Strydom, Fouche and Delport (2005:132), a research design is a blue print or plan of how you intend to go about the research. A research design gets concerned with the final

product, comes up with a research problem as a starting point and centers on the research logic. A definition on design that is closely related to the one already offered by Huysamen (1993:10) is that design is the plan or blue print based on which data is to be gathered in order to look into the research hypothesis or question as economically as possible. According to other scholars research design is all the decisions reached when designing the study such as the sampling, source and methods used in collecting data, the issue of measurements and the method of analysis of data. Further Strydom, Fouche and Delpot (2005:269) postulate that some research designs differ depending on the purpose and the study, the nature of the research questions as well as the skills and the resources at the disposal of the researcher. Nevertheless, every of the possible designs has its perspective and procedures, and the process of the research will also employ the procedures of the selected design. The qualitative research design is that, it is not a step-by-step plan or a fixed recipe, which is normally given to a research. A quantitative research design will identify the choice and the action of the researcher and a qualitative research will determine the choice and the action of the researcher in quantitative research design. Expressed in more simple words qualitative research will in the research phase generate a research strategy which most appropriate fits the research or even base their entire research on the kind of strategy chosen. The above approaches were therefore considered in the choice of the right research design to be used in this study. In the research, a quantitative and qualitative methodology was used. The research was carried out on Chikafa Ward twelve in Mbire District Zimbabwe. The community was chosen due to the fact that the community has had three (3) strongly partitioned rainfall seasons because of floods. The paper conducted interviews with the stakeholders in the district and in the community levels and interviews with some randomly selected households at the community level.

3.4 Sample Selection and Size

Strydom, Fouche and Delport (2005:193) define sampling as merely taking a part of a universe or population in order to represent such population. Although it has always been said that, the bigger the population, the smaller the percentage of that population; the sample must have and vise versa. In the case of a relatively small size of population, the sample is expected to take relatively larger percentage of the population. In small samples, researchers are limited in their possible conclusions of representativeness and accuracy, but large samples will permit them to make more correct and accurate forecasts than small ones. Moreover, Strydom, Fouche and Delport (2005:194) add that feasibility is the biggest reason as to why there should be sampling.

The full coverage of the whole population is rarely achievable and it is impossible to reach all the members of a population under focus. Although theoretically it may be possible to identify, contact and study all the relevant population, it is normally a prohibitive venture due to the factor of time and cost associated with it. Use of samples can therefore yield more precise information than would have been studied in case you have sampled the entire population. This is because in case of a sample, time, money and efforts can be focused in order to give superior quality research, superior instruments and deeper information. The households, institutions and community leaders and practitioners were therefore purposely chosen as the target population for the study that is, at household, district and community level respectively. Strydom Fouche and Delport (2005:202) maintain that purposive sampling is completely a matter of opinion of the researcher because a sample consists of things that have the greatest features, representative or characteristic features of the population. Because of the time constraint and limitation of financial resources, four hundred and five households were sampled randomly (at community level) to interview twenty-five households. Three interviews and a key informant interview would have been done at household and community levels respectively.

3.5 Study Methodology

The research was conducted through the emotional and mathematical mode. Strydom, Fouche and Delport (2005:159) are of the view that measuring instruments are commonly used in qualitative approaches of data collection. Measurements This is the practice of explaining the abstract concepts in terms of certain indicators by attaching numbers or other symbol to these indicators whereas in qualitative research, the decisions and acts of the researcher will decide the design or plan. As mentioned above, there was the use of quantitative and qualitative methods in the study with the intention of triangulation. Triangulation theory is founded on belief that the possible bias of a given source of data, the investigator and methodology shall be cancelled out when combined with other data sources, investigator and methodologies. These data collecting methods were employed:

3.6 Quantitative household Questionnaire

Babbie and Mouton (2001: 233) also hold that the simple aim of a Questionnaire is the achievement of facts and opinions on a phenomenon given by individuals who are knowledgeable on a certain subject. The most used generally used instrument is most likely the questionnaires. In this very research, primary data was found by way of directly discussing with the interviewees on household level in order to obtain very reliable and accurate

information. Personal interviews on randomly sampled three (3) hundred households in Chikafa Ward were thus used to collect data. Findings were obtained through interviewing the households in their respective homes. The household Questionnaire covered the following topics: -

3.7 Qualitative key Informant Interview

- Household demographics
- Livelihood Patterns
- Flood impact on:
    - Agriculture Health
    - Infrastructure
    - Education
    - Water and Sanitation
    - Housing and Property
- Vulnerable Groups due to floods
- Underlying causes of vulnerability
- Coping Strategies

The interview was held with key informants using a checklist at ward level. The composition of key informants comprised of all critical players that have a role to play in the management of floods. Some notable organisations and individuals at community level included the following:

1. Traditional Leaders
2. Local Government Staff
3. Councillors
4. Community members

At community level, the interviewees were representatives of the community. It was envisaged that the representatives would give typical perceptions and perspectives on the subject matter.

The interviews were conducted at a venue organised within the community. The key informant and focus group discussions at district and community levels covered the following topics:

- Main Livelihood patterns
- Main Sources of income
- Main sources of food
- Rainfall performance and its effects
- Impact of floods on:
    - Agriculture
    - Health
    - Infrastructure
    - Education
    - Water and Sanitation
    - Housing and Property
- Underlying causes of vulnerability to floods
- Coping Strategies
- Development options to deal with the problem of floods.

3.8 Data Analysis

Data analysis, according to Strydom, Fouche and Delport (2005:218) means seeking answers through the process of interpretation of data and results. The word interpretation means to explain and derive meaning. Explanation of raw data is quite hard or even impossible, you have to describe the data and analyse it and then interpret your analysis findings. Analysis refers to the classification, tabulation, manipulation as well as summarisation of data to get the response to research questions. Analysis is an attempt to condense the information down to something that is sensible and capable of interpretation, in order that the process of studying the relations between research problems can be analyzed, tested, and conclusions made. Interpretation analyses the results, uses inferences that are relevant to the relations under study and makes conclusions on the relations. In the present research, SPSS Data Entry Version 3 was used to create Data Entry Screens. The same case was on quantitative data obtained. This was done through coding the qualitative data and keying them into MS Excel which was then transported to SPSS. Analysis was done on SPSS Windows Version 11.5. Credibility, Transferability and Dependability.

3.8.2 Credibility

According to Strydom, Fouche and Delport (2005:346), the alternative to internal validity is credibility where the researcher aims at showing that inquiry has been carried out in a manner in which there are reasons to believe that the subject matter being studied has been well identified and described. This is to determine the intentionality of the respondents to adjust the most unassailable mistakes and to support the information further. It gives a chance also to sum up what a preliminary stage of data analysis ought to be like and to evaluate data adequacy, a whole as well as a single data point. When carrying out this study, the author was very clear that the data obtained as primary is a fair representation of the problem under study. This has been the case because the approach adopted in its data collection allowed the author to pose some probing questions and to clarify on the areas where it was required. Additionally, through the use of personal interviews, the researcher was sure that the interviewees meant what they were explaining to him and therefore their answers were a fair testimony of the effects of floods to the social-economic livelihoods on which this study was based.

3.8.3 Transferability

Strydom, Fouche and Delport (2005:346) suggest that, an alternative to generalisation is referred to as transferability. It is the degree by which the results can be generalized in to other situations and with other respondents. The researcher has the responsibility of ensuring that results are generalisable between a sample and its target population. Based on the personal interviews given by the sample interviews one established that there was certain similarity and consistency in the responses they gave. In some sense, this made the researcher have the confidence over the responses that the community had over how the floods have affected them in terms of their socio-economic livelihood.

3.8.4 Dependability

According to Strydom, Fouche and Delport (2005:346), dependability is substitute to reliability whereby the researcher endeavors to understand variable conditions in the phenomenon under study and also variable the design made through refinement knowledge of the setting. The research has to give its listeners that should it again be carried out with the same (or similar) respondents (subjects) in the same (or similar) context, its results would come out to be identical. As validity without reliability is impossible and therefore credibility without dependability, the demonstration of former is just enough to prove the presence of the latter.

Relative to this research, the triangulation of information sourced at the community level with that of the household level was done and there was consistency in the data that was generated.

3.9 Conclusion

On the final note, quantitative and qualitative methods were used in the research. Primary data was gathered by use of structured and open-ended questionnaires. However, the analysis considered the primary and secondary data especially when it came to meteorological data. The analysis of results is described in the following chapter.

CHAPTER 4: PRESENTATION AND ANALYSIS OF RESULTS

4.1 Introduction

This chapter tabulates and examines the findings of the questionnaire survey, key informant interviews, observation and focus group discussion of this study, to certain objectives on socio-economic impacts of floods in rural communities in a case of Chikafa community of Mbire District. There is a mixture of various methods used in data analysis in this chapter that includes narrative and interpretative. The results will be grouped, on the co-ordination of the major elements of disaster risk reduction on flood preparedness.

4.2. Analysis of Results

4.2.1 Household Demographics

The demographic distributions from the findings of the research show that out of the sampled 25 households in the survey, 77% were male headed and the remainder female headed. In addition, 68% of the heads of the households were married and 16% were widowed. The ages of the heads of households vary with the most of them aged between 35-39 years as shown in ***figure 4.1 below.***

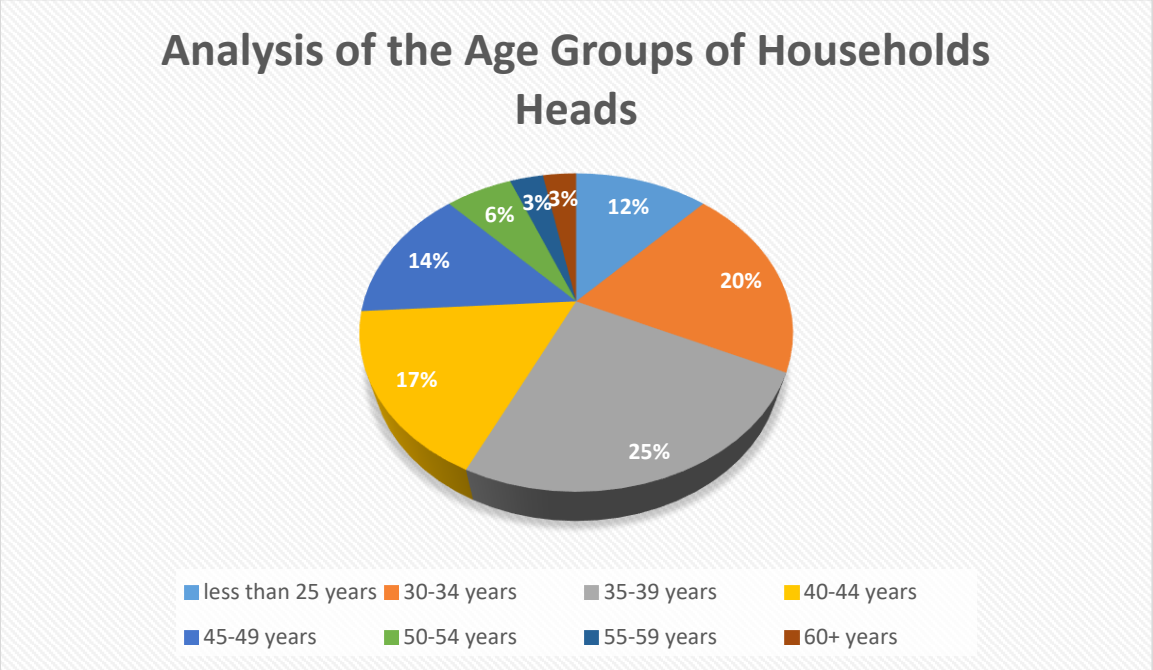

Fig 4.1 shows an analysis of the age groups of household heads

4.2.2 Livelihoods Patterns

The research showed that the ward mostly depends on crop production as their main livelihood. Crop production represents 86% of their livelihood, with fishing contributing 8 % and other

activities making up the remainder. Discussions at ward level showed that small scale farming is the main livelihood in Mbire district's Ward 12, Chikafa, followed by fishing and paid labour. Exposure to floods would therefore heavily affect their main source of food, leading to food insecurity in the ward.

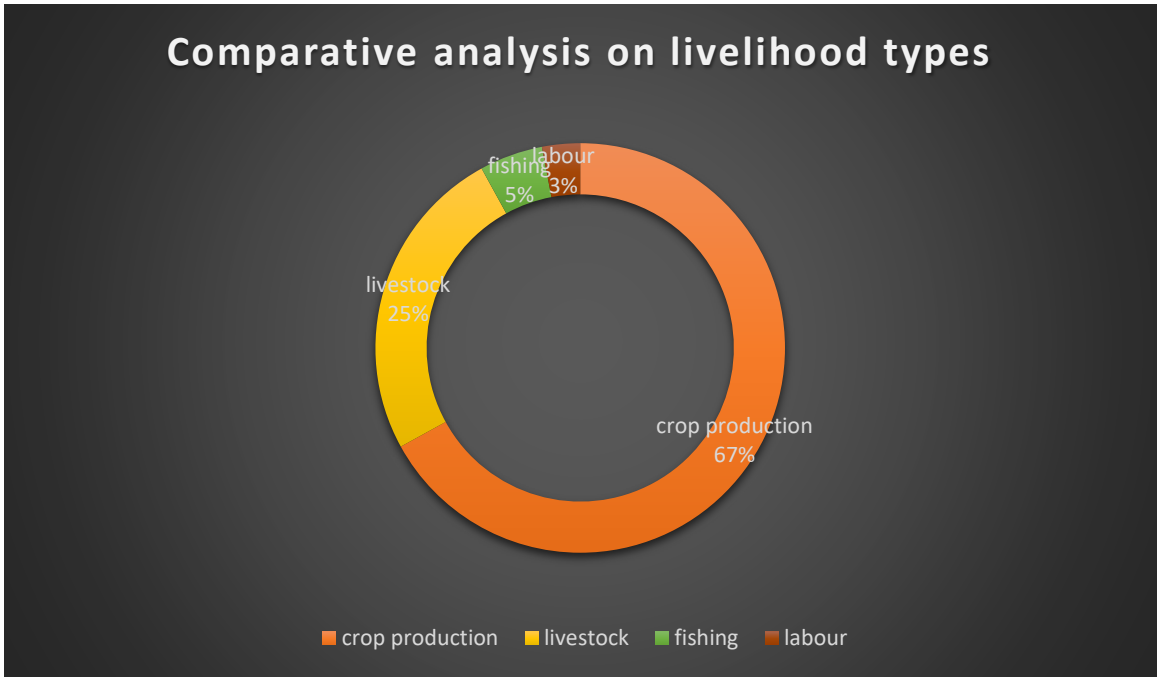

Fig 4.2: Comparative Analysis on the Livelihoods types

As evidence on ***figure 2 above***, the communities in Chikafa Ward have very limited livelihood options as most of them have little or no significant secondary livelihood sources. This implies that the communities in Ward 12 of Mbire District have low resilience to floods as they lack a wide range of livelihood options.

4.3 Impacts of Floods

4.3.1 Impacts of floods on Agriculture

Ninety-two per cent of sampled households suggested that their crop fields had been destroyed by floods. It was also clear that among crops affected by floods, most of it (90%) was the staple crop (maize). This was pegged by Sorghum at 27%. Though no area planted rate was gauged, it was clear that there was some effect on the agriculture which is the primary means of livelihood and income as in the livelihood patterns section. Additionally, households who incurred most of the crop damage on account of floods were discovered to be married (58 per cent) and widowed (13 per cent). The consequences are that they will produce less staple crops that will translate to food shortage. This observation has given improved knowledge of the

susceptibility of the households to the over-reliance on crop production as the sole source of income.

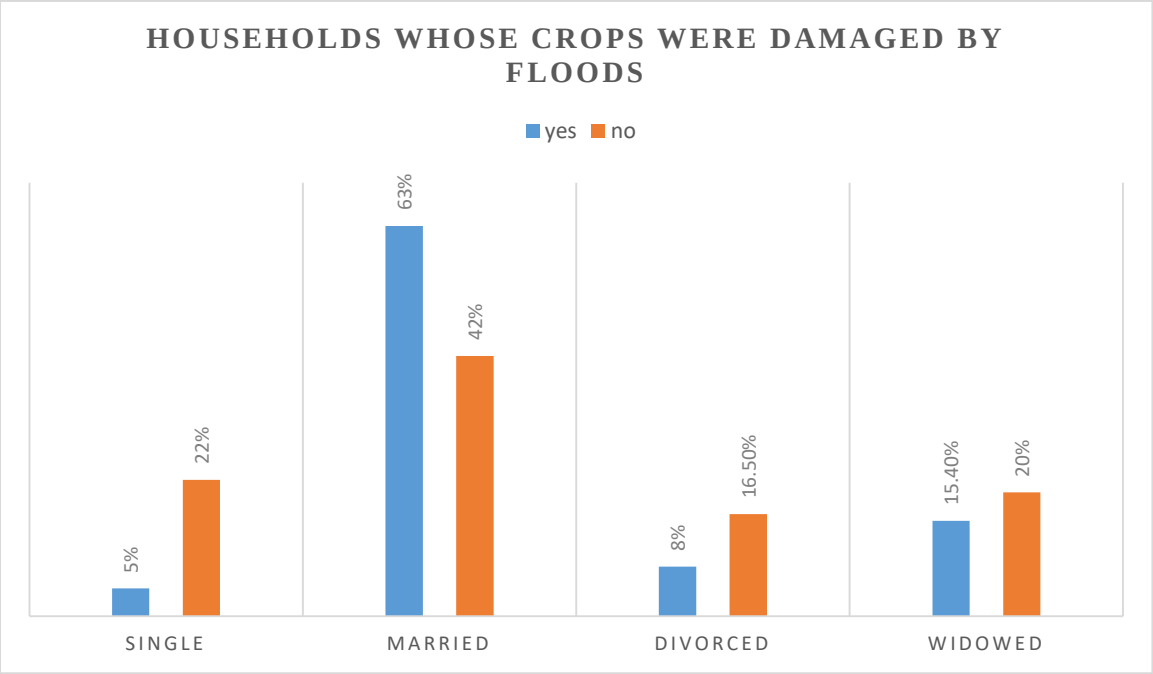

Figure 4.3: Households whose crops were damaged by floods

Moreover, out of the 16% household heads whose marital status is wedded and whose production became less due to damage caused by floods, lacked a source of subsistence livelihoods other than crop production, that they could have used to counter the food insecurity which is evident in the figure 4 above. A third (30%) of the 300 sampled households revealed that they have lost food stock to floods. In the households where their crops and food store were destroyed due to the floods there was also a finding that the majority of them lived in the flood prone grounds of the Chikafa Ward.

4.3.2 Education

Moreover, regarding the 16 per cent of the household heads whose marital status is widowed and whose production capacity was reduced as a result of flood destruction had no alternative means of livelihoods other than the production of crops so as to address the food insecurity as shown in figure 4 above. There were 300 households sampled and 30 percent responded that they have lost their food stocks to floods. The study also found out that, in households targeted where their crops and foods were destroyed by the floods, the majority of the people were located in the flood prone in the Chikafa Ward.

4.4 Implications of the results

The general scope of the research was to determine how the floods affected the social-economic position of the livelihoods of the people in Chikafa Ward in Mbire District Zimbabwe. In spite of the fact that no strictly economical data was obtained it is obvious that the sources of income are integrated in livelihoods according to the information obtained thus in the country mentioned in the literature review various vulnerability tests were performed annually. Any eventuality thus on livelihood would translates to low income and low purchasing power of households. The determining factors of the underlying cause of vulnerability as well as coping strategies and development are determined.

The study results are relevant in terms of the growth of people of Chikafa Ward and the country in general. Those hazards like floods imply that an effort to develop sustainable mitigation measures should be made. In a bid to increase the resiliency of the community in the face of climatic variability, appropriate mitigation measures addressed in the recommendations section should be established. Therefore, the necessity to conduct the continuous assessment of the flood risk is impossible to overestimate.

The vulnerable communities should not be the only people involved in the identification of the mitigation measures but also the entire stakeholders like the Private Sector and Civil Society. They should have sufficient finding towards risk mapping, monitoring and preparation of mitigation and preparedness measures. Flood management should also be prioritized in terms of investment considering variations in climate. Additional community sensitization regarding the presence of the flood threat itself is to be encouraged.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter shows the conclusion and the recommendations which emerged due to this research. The study surveyed a large number of secondary literature and gathered primary data on the basis of which the conclusion and recommendations have been done. The study was carried out in the DRR conceptual framework that places an emphasis on proactive approach to managing disasters. Communities should ensure that they embrace risk reduction approach to the impact of floods. The following questions were to be addressed in the research:

• What is the impact of floods on the socio-economic livelihoods of people in Chikafa Ward of Mbire District?

• Who are the most vulnerable groups to floods and what are their coping strategies?

• What are the sustainable developmental and policy options to deal with the problem of floods?

5.2 Conclusion

As mentioned in this paper under different sectors and between sectors, one can therefore conclude that floods eased the socio-economic standings of people's livelihoods in Mbire District. The study has to a great extent established that settlement patterns are influenced by livelihood patterns to a great extent. It is further observable that the underlying causes of vulnerability of the people are variable and this is a challenge in the process of reducing or minimising the vulnerability of proximity to flood-prone area (57%), residing in flood-prone area and poverty (18%) were found to be the predominant underlying causes of vulnerability in the communities in Chikafa Ward. The research has also established that impact of floods in a certain sector may be transferred to other sectors within the society. As an example, the incidences of outbreaks of diseases (malaria, diarrhoea and coughing) were blamed on the influence of floods on water bodies and sanitation installations as explained under the health section. The fact that the river will be contaminated by water at the peak of the floods and that management of the water in the borehole adds to the risk of health. Moreover, no health facility was destroyed by floods although there was an issue regarding health retrieval owing to destruction of the infrastructure (roads and bridges) as seen in the health section. Moreover, access to school was also affected as schools could not be visited because of impassable roads as explained under the education section.

Based on the research, it was apparent that the implications surrounding the coping of households are different when floods hit a household. Most households are currently using ways of coping that are rather ineffective. At the community and district levels, it was held in

discussions that the coping strategies were unsustainable since they had been adopting them and the situation did not appear to change. The coping capacities that the local communities have are not to be underestimated and they are rather to be enhanced. It needs to work towards lifting livelihoods of the people. As a coping method, the communities must be advised to make houses that are made out of lasting materials and are not in the flood prone region. More, the Ministry of Agriculture and Cooperatives ought to employ through the Extension Services the communities to expand the cultivated area in the upland to spur the food security in the household level. The idea of input support programme to the vulnerable yet viable farmers would be taken into the account. Evidently, there is necessity to come up with better and suitable measures (as elaborated under the implications and recommendations sections) to prepare and deal with the aftermath of the floods there-of. Most importantly, it should be to engage the full players to increase the ability of communities to deal with floods.

5.3 Recommendations

In this chapter it is therefore suitable to indicate some policy consideration that is once taken into effect would however be significant in flood risk management. It is suggested that the following policy considerations be put forward: -

- The communities should be mobilized so that they can permanently shift to new grounds by the government and other key stakeholders as they have shown propensity to changing places. The moving in process should be accompanied by all the required socio amenities like schools, hospitals, infrastructure, water and agriculture backing within a span of three (3) years so that the households will be settled.
- There should also be considerations to incorporate other sources of livelihood in the new area of settlement.
- The communities in the rural areas should be forced in a deliberate policy to construct houses using materials that are durable and to avoid the areas that are prone to floods.
- The Ministry of Agriculture and Cooperatives ought to under the Extension Services to persuade Communities to extend the cultivated area on the upland so as to boost the food security and the level of the household.
- The idea of multi-sectoral approach to flood mitigation, as compared to single sector, should be encouraged because of inter linkages as regards to the effects of floods on other sectors of the society.
- Community based mitigation efforts would be encouraged in order to develop the community resilience on the mitigation measures of floods.

- On the long-term community-based floods early warning systems have to be designed.
- Governments and major Stakeholders are supposed to involve the communities and the local authorities in informing them about the risk of further floods because of the variable climate.
- Constructions of canals into the big Zambezi River have to be considered.
- Consideration of dam constructing should be taken to contain overflowing water. This would be utilized in irrigation.
- The non-flood prone areas as well as, the flood prone areas ought to be mapped out by the relevant authorities.
- The settlements can as well be temporarily sheltered in the non-flood prone areas once the floods occur.

References

A Global Report on Reducing Disaster Risk: A Challenge for Development (2004), United Nations Development Programme, Bureau for Crisis Prevention and Recovery, New York, USA.

Adam, T.P. 1983. Technical Report on Southern African Storm Rainfall, Republic of South Africa. Department of Environment Affairs, Branch of Scientific Services.

African Wildlife: Who is to blame for Floods? 2000. Journal, 54 (3): 24-25.

Alam, A., Bhuiyan, R. A., & Siddique, M. A. B. (2021). Role of local institutions in disaster risk reduction and management: A case study of flood-affected communities in Bangladesh. International Journal of Disaster Risk Reduction, 55, 102083.

Amoako, C., & Boamah, E. F. (2020). The three-dimensional causes of flooding in Accra, Ghana. International Journal of Disaster Risk Reduction, 50, 101711. https://doi.org/10.1016/j.ijdrr.2020.101711.

Arbon, P., Steenkamp, M., Cornell, V., Cusack, L., & Gebbie, K. (2016). Measuring disaster resilience in communities and households: Pragmatic tools developed in Australia. International Journal of Disaster Resilience in the Built Environment, 7(2), 201-215. https://doi.org/10.1108/IJDRBE-03-2015-0008.

Ariyanbandu, M.M. and Wackramasinghe, W.M. 2005. Gender Dimension in Disaster Management: A guide for South Asia: Sri Lanka.

Babbie, E. and Mouton, J. 2001.The Practice of Social Research. Cape Town: Oxford University Press.

Babbie, E. and Mouton, J. 2001.The Practice of Social Research. In Research Methodology: Practical Research Planning ND Design, 7th Edition, Study Guide for DIM 601.Bloemfontien: University of the Free State.

Bankoff, G. 2003. Constructing Vulnerability: The Historical, Natural and Social Generation of Flooding in Metropolitan Manila. Journal, 27 (3): 224-238.

Bhatt, M. R., Shrestha, S., & Acharya, B. K. (2021). Community-based flood early warning system in Nepal: A case study of the Koshi River basin. Geomatics, Natural Hazards and Risk, 12(1), 1-18.

Borrows, P. and De Bruin, D. 2006. The Management of Riverine Flood Risk. Journal, 55:5151-5157.

Brouwer, R., Akter, S.,Brander, L. and Haque, E. 2007. Socio-economic Vulnerability and Adaptation to Environmental Risk: A case study of Climate Change and Flooding in Bangladesh. Journal, 27 (2):313.

Cao, Y., Zhang, L., & Wang, L. (2022). Integrating local knowledge into flood risk management: A case study in China. Sustainability, 14(5), 2824.

Carey, M.2005.Living and Dying with Glaciers: People's Historical Vulnerability to Avalanches and Outburst Floods in Peru. Journal, 47:122.

Carter, W. Nick. 1991. Disaster Management – Disaster Managers' Handbook. Manila, Philippines: Publication of the Asian Development Bank.

Chatterjee, R., Ghosh, A., & Chakraborty, A. (2022). Enhancing flood resilience through community-based disaster risk reduction: Lessons from West Bengal, India. International Journal of Disaster Risk Reduction, 65, 102581.

Crossman, M., Richardson, D. and Milne, J.2006. Proceedings of the In Civil Engineers. A partnership approach to Managing Flood Risk. Civil Engineering. Journal,159 (2):41-45.

Dixit, A. 2003. Floods and Vulnerability: Need to Rethink Flood Management. Journal, 28:155-179. 14.Douben, J.K. 2006. Characteristics of River floods and Flooding: A Global Overview, 1985-2003. Journal, 59:59-521.

Du Plessis, B. 1988. Drought, Floods a Major Setback. The Citizen. 17 March: 11

Dube, E., Mtapuri, O., & Mazenda, A. (2023). Exploring the role of local institutions in flood disaster risk reduction in Zimbabwe. Jàmbá: Journal of Disaster Risk Studies, 15(1), 1-12.

Emergency Management – Preparing for floods. (online)http://harnettorg/fire/flood_preparedness.asp.Retrieved :7June 2007.

Exploring the social impacts of floods risk and flooding in Scotland (April, 2007). (online) http://www. Scotland.gov.uk/publications/2007.Retrieved:28 February 2008.

Floodplain Management in Australia. 1998.In Disaster risk Management Study Guide for DIM 605: Module 2. Bloemfontein: University of the Free State.

Gao, J., Nickum, E. J.and Pan, Y.2007.An Assessment of Flood Hazard Vulnerability in the Dongting Lake Region of China. Journal, 12:27-34.

Greg, B. 2003. Disasters: Constructing Vulnerability: The Historical, Natural and Social Generation of Flooding in Metropolitan Manila. Journal 27 (3): 224-238).

Grunfet, E. 1995. Hydro meteorological, impacts and Management of Extreme floods. (Paper presented at a workshop on long term social and economic impacts of extreme floods at the University of Colorado in November, 1995). Colorado Springs, USA.

Gupta, A. K., Tyagi, P., & Sehgal, V. K. (2021). Role of local institutions in strengthening community resilience to floods in India. International Journal of Disaster Risk Reduction, 54, 102038.

Handbook for estimating the socio-economic and environmental effects of Disasters. 2003. United Economic Commission for Latin America and the Caribbean (ECLAC) and International Bank for Reconstruction and Development.

Hansson, k., Danielson, M. and Ekenberg, L. 2008. A Framework for Evaluation of Flood Management Strategies. Journal, 86 (3):465-480.

Holmes, J. 2008. At Home but Homeless. Zambia Sunday Post. 26 October: 11

Huysamen, G.K.1993.Methodology for the Social and Behavioural Sciences. Halfway House, Pretoria: South Africa.

IRIN. 2008. Kenya: Thousands affected as Floods Submerge Farms. Humanitarian News Analysis, 5 November.

Jha, S. K., Gundimeda, H., & Shyamsundar, P. (2020). Strengthening local institutions for effective flood risk management in India. Sustainability, 12(6), 2437.

Kelman, I., Gaillard, J. C., Lewis, J., & Mercer, J. (2024). Learning from the history of disaster scholarship and practice for climate change. International Journal of Disaster Risk Reduction, 49, 101566.

Khandlhela, M. and May, J. 2006. A study on Poverty, Vulnerability and the Impact of Flooding in the Limpopo Province, School of Development Studies, University of Kwazulu Natal, South Africa. 7

Kimbrough, E.P., West, K.P., Katz, J., Leclerq, S.C., Khartry,S.K. and Shreshtha,S.R.2007.Risk of Flood Related Mortality in Nepal.Journal,31(1):57-70.

Know Risk (2005), United Nations, Geneva, Switzerland.

Kundzewicz, Z.W., Budhakooncharoen, S., Bronstert, A., Hoff, H., Lettenmaier, D., Menzel, L. and Schulze, R. 2002. Natural Resources forum: Coping with Variability and change: Floods and Droughts. Journal, 26 (4): 263-274.

Lassa, J. A., Surjan, A., Caballero-Anthony, M., & Fisher, R. (2020). Measuring political will: An index of commitment to disaster risk reduction. International Journal of Disaster Risk Reduction, 45, 101449.

Lind, N.,Mahesh, P. and Nathwani, J. 2008. Structural Safety: Assessment and Affording the Control of Flood Risk. Journal 31 (2): 143-147.

Lindsell, K. M. and Prater, S. C. Abstract on "Assessing Community Impacts of National Disasters": 176-178 (electronic), National Hazard Review vol. 4, No. 4, November, 1, 2003.

Living with Risk (2002): A global Review of Disaster Reduction Initiatives, Geneva Switzerland.

Majumdar, A., Ghosh, S., & Mukhopadhyay, A. (2023). Enhancing community resilience to floods through participatory mapping and planning: Lessons from West Bengal, India. Disaster Prevention and Management: An International Journal, 32(2), 202-216.

Mavhura, E. (2017). Embracing local knowledge for disaster risk reduction. Jàmbá: Journal of Disaster Risk Studies, 9(1), 1-9. https://doi.org/10.4102/jamba.v9i1.310.

Mirza, Q.M.M., Dixit, A. and Nishat, A. 2003. Natural Hazards. Journal 28:7.

Mohajerani, B., Bahrami, N., & Mousavi, S. M. (2021). The role of local institutions in disaster risk reduction: A case study of flood management in Iran. International Journal of Disaster Risk Reduction, 54, 102032.

Mohanty, B., Pattanaik, A., & Pradhan, G. (2020). Strengthening local institutions for community-based flood risk management in Odisha, India. Disaster Prevention and Management: An International Journal, 29(2), 189-203.

Mohapatra, K.P. and Singh, D.R. 2003. Flood Management in India. Journal, 28:131-143.

Mustafa, D. 2002. Linking Access and Vulnerability: Perceptions of Irrigation and Flood Management in Pakistan. Journal, 34 (1):94-105.

Ninno, D.C., Dorosh, A.P. and Smith, C.L. 2003. Public Policy, Markets and Household Coping Strategies in Bangladesh: Avoiding a Food Security Crisis Following the 1998 floods. Journal, 31 (7):1221.

Nott, J. 2006. Extreme Events: A Physical Reconstruction and Risk Assessment. Cambridge University Press. New York.

Nxumalo, S. 1984.Economy takes Battering on Swaziland. Rand Daily Mail.27 February: 2.

OCHA. 2008. Situation Report 5-Southern Africa Floods. 31 January.

Ologunorisa, T. E., & Adeyemo, A. (2005). Public perception of flood hazard in the Niger Delta, Nigeria. The Environmentalist, 25(1), 39-45. https://doi.org/10.1007/s10669-005-3095-2.

Oxford, English Oxford Living Dictionaries, 2018. ⟨https://en.oxforddictionaries. com/definition/flood⟩.

Parker, J.D. 2000. Floods. Tangler and Francis, National Academy Press, Asian Disaster Preparedness Centre, Thailand

Rashid, F.S. 2000. The Urban Poor in Dhaka City: Their Struggles and coping strategies during the floods of 1998. Journal, 24 (3): 240-253.

Report on The Regional Stakeholders Consultative Workshop on Disaster Risk Management held in December, 2004 in South Africa.

Report on The Regional Stakeholders Consultative Workshop on Disaster Risk Management held in December, 2004 in South Africa.

Saha, R., Saha, N., & Sahu, N. (2021). Role of local institutions in community-based disaster risk reduction: Experiences from flood-affected areas in India. International Journal of Disaster Resilience in the Built Environment, 12(1), 103-118.

Sinclair, S. and Pegram, G. 2003. A Flood Nowcasting System for the eThekwini Metro, Volume 1: Urgent Nowcasting using Radar-An Integrated Pilot Study. Water Research Commission (WCR). Silowa Printers South Africa.

Smith, I.D. and Handmer, W.J. (eds). 1990 Losses and Lessons from The Sydney floods of August, 1986 (Volume 1): Prepared for Public Works Department of Water Resources, New South Wales. Environmental Management Pty Ltd, Sydney. Centre for Resource and Environmental Studies, Australian National University, Canberra.

Smith, J., & Sharma, P. (2022). Community participation in regional disaster risk reduction. Environmental Hazards, 21(4), 312-330. https://doi.org/10.1080/17477891.2022.2051678.

Smith, K.and Ward, R. 1998. Floods: Physical processes and Human Impacts. John Wiley and son. England.

Smith, W.B. 1996. Coping as a Predictor of outcomes following the 1993 Midwest Flood. Journal, 11(2): 225-239.

Snoussi, M., Ouchani, T. and Niazi, S. 2008. Vulnerability Assessment of the Impact of sea-level rise and flooding on the Moroccan coast: The case of the Mediterranean East Zone. Journal, 77 (2):206-213.

Stephenson, S. R. 1991. Disaster Assessment (1st Edition), Disaster Management Training Program, UNDP

Strydom, H., Fouche C. B. and Delport C.S.L (Third edition). 2005. Research at Grassroots for Social Sciences and Human Service Professions.

Theron, M. 2007. Climate Change and Increasing Floods in Africa: Implication for Africa's Development.

Twigg, J. (2015). Disaster risk reduction. Overseas Development Institute.

UNDP. 2005. Human Development Report.

UNEP (2006): Gathering Storm: The Humanitarian Impact of Climate Change. 3rd World Water Forum: Poverty and Floods (March, 2003). (online)http://www.adb.org/water/theme/floods.asp. Retrieved: 28February, 2008.

United Nations Office for Disaster Risk Reduction (UNDRR). (2021). Global assessment report on disaster risk reduction 2021. UNDRR.

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APPENDICES

Questionnaire guideline

Topic: assessing socio economic impacts of floods

Instructions:

Use checkboxes (✓) for closed questions.

Provide brief written answers for open-ended questions.

All responses are anonymous.

Section 1: Socioeconomic Impacts of Floods

1. What is your primary source of income?

□ Farming

□ Livestock

□ Small business

□ Formal employment

□ Other (specify) _____

2. Have you experienced flood-related losses in the past 5 years?

□ Yes

□ No

3. If yes, what type of losses did you experience? (Tick all that apply)

□ Crop damage

□ Livestock loss

□ Property damage

□ Income loss

□ Other (specify) _____

4. How do floods affect your livelihood? (Tick all that apply)

□ Reduced income

□ Food insecurity

□ Displacement

□ Health issues

□ Other (specify) _____

Section 2: Underlying Causes of Vulnerability

1. What do you think are the main causes of flooding in your area? (Tick all that apply)

□ Climate change

□ Poor drainage systems

□ Deforestation

□ Proximity to rivers

□ Other (specify) _____

2. How would you rate your awareness of flood risks?

□ High

□ Medium

□ Low

3. Have you received any flood-related education or training?

□ Yes

□ No

4. Do you have access to early warning systems?

□ Yes

□ No

Section 3: Coping Mechanisms

1. How do you currently cope with flood-related challenges? (Tick all that apply)

□ Relocation

□ Flood-proofing homes

□ Crop diversification

□ Livestock management

□ Other (specify) _____

2. Have you adopted any new coping strategies in response to recent floods?

□ Yes

□ No

3. If yes, what are they? (Tick all that apply)

□ Improved drainage

□ Flood-resistant construction

□ Early warning systems

□ Emergency preparedness plans

□ Other (specify) _____

4. Do you receive support from local authorities or organizations during floods?

□ Yes

□ No

Section 4: Demographic Information

1. Age: _____

2. Occupation: _____

3. Household size: _____

4. Length of residence in the area: _____