

**BINDURA UNIVERSITY OF SCIENCE EDUCATION**  
**FACULTY OF SCIENCE AND ENGINEERING**  
**DEPARTMENT OF DISASTER RISK REDUCTION**



**AN ASSESSMENT OF THE LEVEL OF FLOOD PREPAREDNESS IN CHITSUNGO  
WARD 10 OF MBIRE DISTRICT ZIMBABWE**

**BY**

**WORSHIP WILFRED JUANKINYU**

**B213598B**

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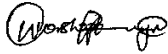
Author                                  Worship Wilfred Juankinyu

Registration Number      B213598B

Degree                                  Bachelor of Science Honor's Degree in Disaster Management Sciences

Project Title: **AN ASSESSMENT OF THE LEVEL OF FLOOD PREPAREDNESS IN ZIMBABWE: A CASE OF CHITSUNGO COMMUNITY IN MBIRE DISTRICT**

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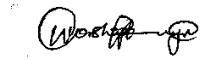
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## **DEDICATION**

This dissertation is dedicated to my parents Emmanuel Juankinyu and Ruth Mwaruza. Thank you for your undying support and love. I also dedicate this dissertation work to my siblings Hilda, Heather and Wilbert. Lastly, I dedicate this project to my grandmother Faina and grandfather Alfred Jamu who always wish to see me prevailing through. I thank you all for believing and having faith in me and being a blessing in my life.

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## **ABSTRACT**

The history of disaster in Zimbabwe shows that community households have been severely affected by flooding disaster. Flooding resulted in widespread impacts which include loss of life, injuries, infrastructure destruction and environmental degradation disturbing the functioning of the environment caused by lack of flood preparedness and effective response. Household flood preparedness is not considered much in Zimbabwe, rather than being prioritized for all community households. But community households in Zimbabwe have a responsibility to ensure a community environment that is favorable and safe for day to day living. The research aimed to assess the level of household flood preparedness in Mbire District in Chitsungo ward 10 with 1432 households which were randomly selected and assessed. Through questionnaires, key informant interviews, observations and focus group discussions, data was collected to identify existing flood preparedness measures and resources in the community, barriers to effective flood preparedness and the contribution of local institutions to effective flood preparedness. The study revealed that the community households were affected by flooding disaster. Besides having high exposure of households to flooding, the majority of households had not undertaken adequate flood preparedness measures, activities and strategies to reduce the impact of flood disaster in Chitsungo ward 10. The findings of this research show that households are less prepared to flooding. Therefore, local communities should develop preparedness measures by conducting regular drills and simulations, developing emergency plans, identifying flood prone areas and create evacuation routes so that everyone would be aware. In addition, local institutions should allocate resources to enhance community resilience by setting aside fund for infrastructure development, training and education of community members and support community-based projects.

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## **Acronyms**

DCP

Department of Civil Protection

DRR

Disaster Risk Reduction

NGOs

Non-Governmental Organizations

CBO

Community-Based Organization

## **CHAPTER 1: GENERAL INTRODUCTION**

### **1.1 Introduction**

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**

Natural disasters such as flooding has increased in intensity, magnitude and pattern globally due climate change. IEE, (2013), conducted a study which shows that flooding is one of the destructive disasters, with great impacts recorded as a result of climate change, which cause high rainfall that exceeds the carrying capacity of water storages. The increase in the frequency, intensity, magnitude and pattern of flood disasters continue to be felt more than before causing impacts to the community. A study conducted by, Oxford, (2018) shows that, flooding is an overflow of large amounts of water beyond its normal limits, exceeding the carrying capacity of rivers and water storages, displacing people causing serious disruption to their livelihoods, infrastructure, valuable assets and land. The occurrence of flooding has resulted in disturbing the functioning of the environment causing widespread human, material, property damage, loss of life, injuries and even environmental damage. Merz et al., (2021), explains that flooding has been recorded as the most destructive disaster globally resulting in deaths, financial constraints and infrastructure damage. Adding on, scholars such as Hochrainer-Stigle et al., (2021), articulate that globally countries are being affected by flood risk.

Some of the losses from flooding disaster as outlined by Farai, (2017), explain that Zimbabwe experience almost 250 losses of lives annually due to the occurrence of flooding. It causes severe impacts on infrastructure, environment, public services, communication services, deterioration on the quality and quantity of water. According to Bryceson and Jordhus-Lier, (2020), in the year 2000, on February 22, Zimbabwe was hit by cyclone Eline which caused the occurrence of flooding and has recorded 106 deaths, and affecting almost 500, 000 people. Floods which occurred in Masvingo province in the year 2014 caused adverse impacts to the nearby community such as Ngundu. This affected 62, 000 people and was declared a national disaster, (Mavhura, et

al., 2017). This was caused by the destruction of Tokwe-Mukorsi dam. A study conducted by Lucas, (2021), shows that flooding has resulted in displacement of 3 102 households, infrastructure destruction and 129 deaths. A study conducted by NEMA (2018), shows that in Kogi State in Nigeria, floods has caused infrastructure destruction and affected over 89, 547 people. Floods are now recurring phenomenon impacting community livelihoods, (Kenna, 2008). This has been evidenced in east parts of Namibia whereby most communities affected by impacts of floods, (Mabuku, 2013).

Evidence from different studies shows that flood disaster poses negative impacts to the households in many communities. Scholars such as Farai, (2017), argues that statistics in Zimbabwe reveled that yearly flood claim about 250 lives. According to Kabubi (2011), flooding is more destructive to the extent that weak structures are often destroyed. For instance, weak structures such as roads, houses and any other old buildings was affected. Apart from infrastructure destruction, flooding also pose impacts to the households by increasing health risk to the members of the society. Communities affected by flooding might face challenges such as lack of portable water that result in illness and outbreak of deadly water-borne diseases, (Woodruf et al., 2007). A study conducted by Kent et al., (2000) highlighted that in rural Australia due to repeated flooding, this has resulted in causing problems to men's health such as psychological cases. Gautam (2007), add on saying that floods affected most vulnerable groups in Nepal causing post traumatic effects.

By having a deeper understanding on the importance of households preparedness during flooding disasters, globally efforts are being done in trying to enhance community preparedness. There is development of national polices that governs international collaboration to integrate disaster risk reduction into urban planning and development such as the Federal Emergency Management Agency (FEMA) of 1979. Also, the United Nations International Strategy for Disaster Reduction emphasized on the risk reduction through vulnerability reduction and enhancing resilience. A study by Mysick, (2015), shows that the Sendai Framework for Disaster Risk Reduction, was adopted as a way of reducing disaster impacts. Therefore, rural households should be proactive to reduce flood impacts. However, there is limited literature on the level of preparedness of rural communities when it comes to flood hazard management and this renders this research very important as it will contribute to the board of knowledge.

### **1.3 Statement of the problem**

Flooding is a perennial problem in Chitsungo community, exacerbated by climate change which is affecting households, their livelihoods and the environment. Rising temperatures and changing precipitation patterns are altering flood dynamics causing the impacts of flooding continue to be felt more than before, since flooding is now a recurring phenomenon which is compounded by increasing human population and assets exposed to the hazard. There is a continued increase in loss of lives, property damage, infrastructure destruction, injuries, psychological effects, environmental degradation and even disturbing the functioning of the environment or society due to flooding. The community households are greatly affected by flooding in the district regardless of government and NGO efforts to minimize the flood impacts in the district. This is because, flooding in Chitsungo community is unavoidable but the impacts of this hazard can be mitigated through a number of measures which can be structural and non-structural. Thus this research aims to assess the level of preparedness of the community so as to inform tailored interventions to reduce the impacts of flooding.

### **1.4 Research aim**

The study aims to critically assess the level of flood preparedness in Chitsungo ward 16 of Mbire District Zimbabwe.

### **1.5 Research objectives**

1. To assess existing flood preparedness measures and resources in the community.
2. To identify barriers to effective flood preparedness in Chitsungo.
3. To assess the contribution of local institutions to effective flood preparedness in Chitsungo.

### **1.6 Research questions**

1. What are the existing flood preparedness measures and resources in the community?
2. What are the barriers to effective flood preparedness in Chitsungo?
3. To what extent are the local institutions contributing to effective flood preparedness?

### **1.7 Justification of the study**

This research will help to protect lives and household assets, safeguarding household livelihoods and reduce recovery cost. This is because, it helps in developing Disaster Risk Reduction initiatives which are tailored to reduce vulnerability, enhance resilience and capacitate the households. The findings of this study would be made available to the Government of Zimbabwe

especially to the Department of Civil Protection, the Ministry of Local Government and Mbire District and the Mbire Rural District Council. Baseline information about level of flood preparedness can guide the formulation of tailored interventions to ensure effective Disaster Risk Reduction at household level.

### **1.8 Delimitation of the study**

The research is going to be carried out in Chitsungo community ward 10 Mbire District, in Mashonaland Central Province. All the villages in Chitsungo community are going to be selected to represent the whole ward. The key stakeholders of this study are going to be the head of department at the office of Local Government, Councilors, Village heads, and the community members. The research focused on flooding as the disaster affecting households at any time, as it seeks to have a deep understanding on the level of household flood preparedness.

### **1.9 Limitation of the study**

The research might be affected by resource constraints whereby conducting comprehensive research in Chitsungo rural community may be challenging due to limited financial resources. Thus, this research makes use of cost-effective data collection methods such as questionnaire and observation which helped to overcome this challenge. In addition, poor community participation was another challenge that was faced. This was resolved by explaining to the community the importance of their participation in this research and how this research was going to be useful to them and this resulted in increasing community participation hence the study was a success. Furthermore, this research was subject to respondent bias since the community escalated figures so that they could benefit from the aid that was assumed to come after this research, since the community is being assisted by a number of NGOs and the government because of their vulnerabilities. To resolve this, the researcher explained to the community members that this was purely academic research without any material or financial benefit and in addition to this the researcher triangulated data sources as to ensure validity of this research.

### **1.10 Organization of the study**

The research is organized into five chapters whereby chapter 1 explore information about introduction of the study in the Chitsungo in Mbire District, covers the background of the study, statement of the problem, research objectives, research questions. Chapter 2 reviews the conceptions, methods, and relevant literature concerning flood disaster preparedness in community

households. More so, chapter 3 presents the methods used by the researcher in carrying out the research and chapter 4 presents data presentation, analysis, and discussion of findings addressing the research questions. In an overview, chapter 5 presents the discussion, conclusion and recommendations of the research based on the results.

### **1.11 Definition of terms**

**Preparedness** is defined as way of gaining knowledge, capacities, and practices to achieve satisfactory level of readiness to respond to, recover from disaster impacts according to UNISDR (2015).

**Flooding** is an overflow of large amounts of water beyond its normal limits, exceeding the carrying capacity of rivers and water storages, displacing people causing serious disruption to their livelihoods, infrastructure, valuable assets and land according to Oxford (2018).

**Resilience** is defined as the ability of the affected community to bounce back from the disaster impacts in a timely and restoration manner according to (United Nations General Assembly, 2016, p.22).

**Disaster risk reduction** is systematic efforts to analyze and reduce the causal factors of disasters aims to prevent the creation of new risks, reduce existing risks and manage residual risks through sustainable development practices UNDRR (2021).

**Risk perception** is defined as the view and understand that the community will have either destructive or of less harm for the impending disaster, Lemee. et.al., (2018).

**Flood preparedness** refers to the state of readiness and capacity of individuals, communities, and institutions including measures such as early warning systems, emergency evacuation plans, flood mitigation infrastructure, and access to emergency supplies and resources to effectively respond to and recover from the impacts of flood events, (Amoako & Boamah, 2020).

**Flood mitigation** refers to the implementation of structural and non-structural measures to reduce the potential loss and damage, (Ogunorisa and Adeyemo, 2005).

**Early warning systems** these are mechanisms and processes used to provide timely and accurate information about the likelihood, magnitude and timing of an imminent event, enabling individuals and communities to take appropriate preparedness and response actions, (Arbon et al.,2016).

**Emergency evacuation plan** refers to comprehensive strategies and procedures developed to facilitate the safe and efficient movement of people and resources from high-risk areas to designed safe areas, (Twigg, 2015).

**Disaster risk management** is a systematic way of implementing strategies, frameworks and guidelines aimed to reduce disaster impacts, (Twigg, 2015).

### **1.12 Conclusion**

This research begins with discussing the background of the study and what exactly pushes the researcher to study about flood disaster preparedness at household level that is the problem. This research is important as it will help in policy formulation and helps the frameworks that governs flood preparedness. Thus, the major focus of this research is to assess household flood preparedness in the Mbire District.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Introduction**

The purpose of this chapter is to explore the existing literature on flood preparedness in household globally. This chapter first highlight on broad concepts covered by the research questions that include flood preparedness measures and resources available in the community. Then the other focus of this chapter is on reviewing different studies on research questions concerning barriers to effective flood preparedness and contribution of local authorities for effective flood preparedness. The literature covered a broad perspective including global, regional, national and even local level with the aim of revealing research gap that justify this research. This chapter also offers an explanation on both theoretical and conceptual frameworks in which this research was situated.

### **2.2 Flooding**

The worldwide damage caused by floods has been extremely severe with great impacts in recent decades up to date. Flooding has become a global issue, increasing in the number and complexity. It has become a recurring phenomenon causing adverse impacts globally. Zimbabwe is one of the countries affected by floods resulted in high deaths rates, infrastructure damage, environmental degradation and widespread material loss sometimes causing it difficult for the affected community to bounce back to a better stage. In recent decades, flood damage has been remarkably severe, and both the frequency and intensity of floods are on the rise, (Wolfgang Kron, 2015). The risk of flooding is considered to increase more as a result of increase in climate change. Due to increase in climatic conditions, there is an accelerating rate in intensity, duration, magnitude and onset speed of flooding, (UNDSR, 2018). The frequency and intensity of floods have increased in recent decades due to various factors, including climate change, urbanization and environmental degradation, (Madan and Rou tray, 2015). According to Merz et. al., (2021), explains that flooding has been recorded as the most destructive disaster globally resulting in deaths, financial constraints and infrastructure damage.

Examples of some major flooding disasters affecting households include, in the year 2000, on 22 February, Zimbabwe was hit by tropical cyclone Eline affecting south and east parts of the country causing the occurrence of flooding. Flooding has recorded 106 deaths, and affecting almost 500 000 people, (Bryceson Jordhus-Lier, 2020). In the period between December 2010 to January 2011, some parts of Zimbabwe received highest amounts of precipitation which resulted in

flooding. The flood impacts were also experienced in north and south parts of the country in the year 2013. The impacts of floods including affecting 10 households, and destroying agricultural produce were recorded. Some parts of Masvingo province were hit by floods in the year 2014, due to an increase in the amount of rainfall received. The floods affected more than 62, 000 people in different areas around Masvingo and it was declared as a national disaster. Due to an increase in rainfall recorded, this has resulted in Tokwe-Mukorsi dam disaster. Mavhura et al., (2017), argues all the communities residing along the river were susceptible to flooding. Scholars such as Richard, (2015), shows that floods have resulted in 10 deaths, more than 200 homes were destroyed and 200 households were relocated. Information was disseminated to the public in the year 2016 warning them about the impended flood disaster which then resulted in affecting more than 394 households and 13 schools. A study by Nyoni and Moyo, (2022), articulated that flooding has resulted in 31 deaths and 200 mine workers being trapped underground at Hwange Colliery Company. Flooding has resulted in relocation of 909 households, destruction of 1 bridge in Tsholotsho. In Nigeria flooding has caused great impact to the community causing financial losses, (Okunola, 2024). This has been evidenced by flood impacts recorded which shows that flooding has resulted in causing economic constraints, and effecting human well-being. For instance, catastrophic floods affected the largest part of Nigeria in the year 2012. Muzenda and Mudavanhu (2016) explained about Nepal floods which affected 67 schools and 23 000 students. In Kogi state, floods of 2018 destroyed about 1.8-billion-naira worth of properties while affecting over 89, 547 people NEMA (2018).

Coming across different studies, flooding is categorized based on their causes, impact, mechanisms and locations such as natural flooding. Flooding has become a serious challenge in many households causing devastating impacts on the economy, social status, healthy and infrastructure. It has remained the most damaging disaster worldwide causing severe damages including economic loses, loss of human lives and infrastructure destruction. There are different types of floods such as river floods, pluvial floods, coastal floods, flash floods and urban floods that affect households causing devastating impacts to the community. These floods can be as result of nature or sometimes are triggered by human activities. Some of these disasters are perceived as sudden onset disaster flooding since they emerge quickly just after rainfall such as flash floods. Flooding has become a serious phenomenon at the global, regional, national and local levels with devastating impacts for communities, economies and ecosystem worldwide. The increasing

frequency, pattern and magnitude can be exacerbated by different factors such as climate change, deforestation, urbanization, poor land-use, degradation of natural flood mitigation systems and insufficient implementation of flood preparedness measures causing extensive property damage and loss of life. In addressing this global issue, flood preparedness measures such as early warning system, improved infrastructure resilience, sustainable land-use practice and empowering local communities to implement mitigation strategies should be considered.

### **2.3 Theoretical Framework: The Disaster Management Cycle**

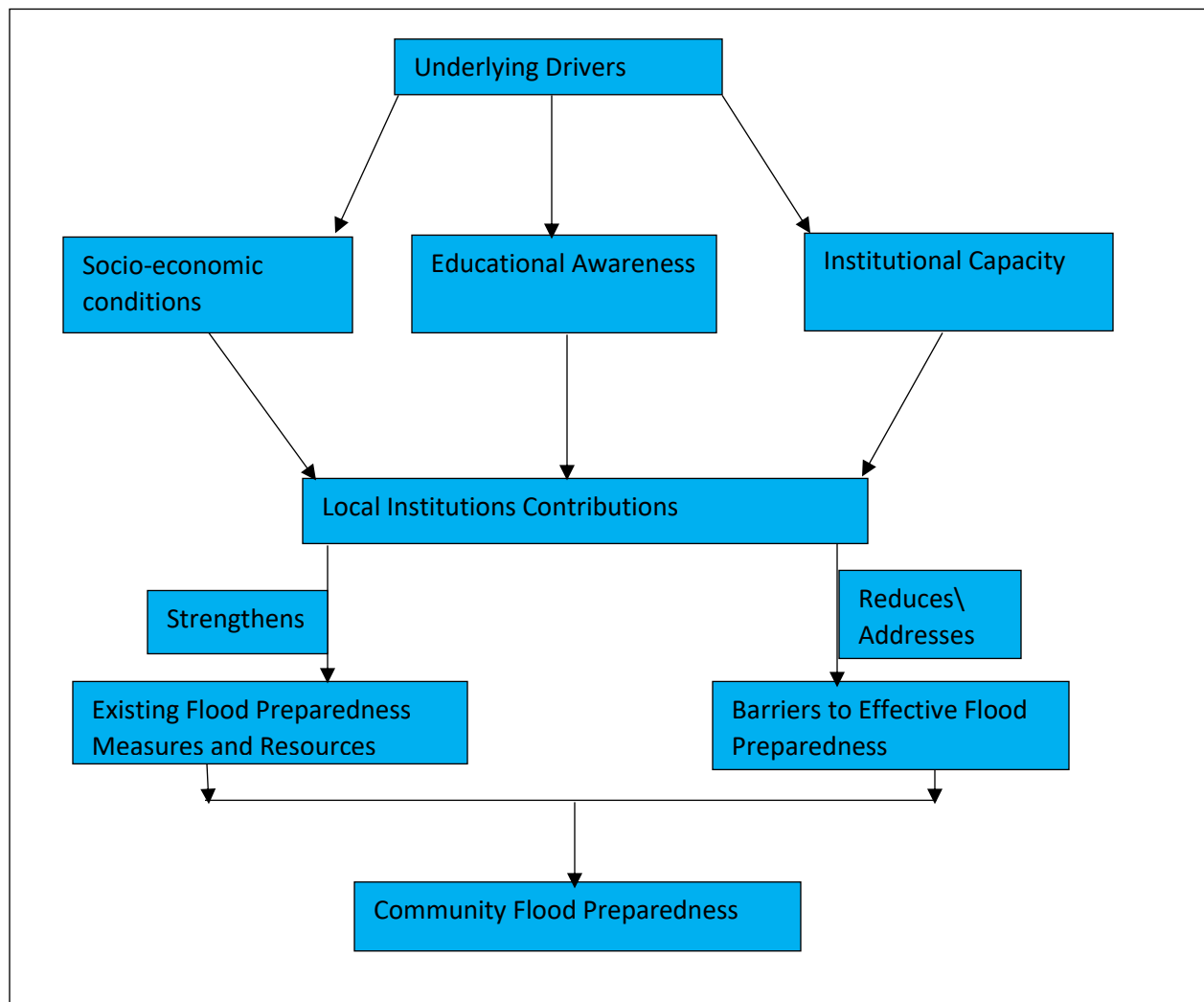
The concept of flood disaster follows a cycle with phases in which the aspect of management plays crucial role to minimize and reduce the adverse impacts of flood disasters. This can help in developing effective policies aimed at disaster risk reduction (DRR), (Jones et al., 2020). The disaster management cycle is not just a theory but it is consisted with practical exercises that are aimed at increasing knowledge and awareness, (UNDRR, 2018). One of the mostly emphasized model used by social scientist since the beginning of the 20<sup>th</sup> century which brings out a clear picture of the disaster life cycle concept consist of four main phases that include preparedness, mitigation, response and recovery (Smet et al., 2015). Fig 2.1 below shows disaster management cycle and all its phases focuses on mitigation and preparedness falls under pre-disaster phase which emphasizes capacity-building while response and recovery falls under post-disaster phase. Therefore, this research focuses on prior stage that is preparedness in households as it important in effectively mitigating the impacts of flooding. Preparedness phase allows investing in proactive measures such as effective early warning system, improved infrastructure so as to minimize the impacts of flooding. This also allows the development of contingency plans, training and education on how to respond and evacuation procedures. The proactive approach not only saves lives but also reduce economic consequences of flooding in the long-run. By focusing of preparedness phase the research will provide valuable strategies that can help the communities to achieve a satisfactory level of readiness to respond flooding.



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

## **2.4 Conceptual Framework: The Community Flood Preparedness Enablers and Barriers**

The understanding of flood disaster is explained through the conceptual framework highlighting the aspect of reducing risk attributed to flooding. This framework shows the interconnected factors that influence community's level of flood preparedness. This framework aims to understand and analyze the factors that enable and affect community's ability to effectively prepare for floods. This views preparedness as a dynamic outcome shaped by a balance between positive forces such as enablers and negative forces such as barriers, all influenced by the underlying contextual drivers. It is used to define key concepts and their relationships within research, providing foundation for understanding how variable interact in a given context (Riggan et al., 2021). It outlines variables that explains flood preparedness, focusing on existing flood preparedness and resources, barriers to effective flood preparedness and contribution of local institutions to effective flood preparedness. These variables are influenced by different contextual factors such as education and awareness, resource availability, institutional capacity and socio-economic conditions. Fig 2.2 below shows the dynamic relationship of the elements highlighting the interdependent nature of flood preparedness in the community.



**Figure 2.2 Conceptual Framework source (Author)**

## 2.5 Flood Preparedness measures and resources

The global community has recognized an increase in frequency, severity and pattern of flooding events due to climate change, leading to the implementation of initiatives to reduce flood impacts. UNDRR, (2015), disaster risk reduction efforts are being practiced globally for capacitating the communities so as to reduce disaster risk including flood impacts. Adding on, the Global Facility for Disaster Reduction and Recovery is a partnership hosted by the world bank, provides technical and financial assistance to vulnerable countries to strengthen their disaster risk management capabilities (GFDRR, 2021). Several mitigation strategies either structural or non-structural

measures of flood preparedness have been employed to minimize the impact of flood at global level. UNDRR, (2021), explain that many countries have implemented early warning systems, improved infrastructure, and enhanced community resilience to address flood related risk. For instance, the government of Bangladesh has invested in the construction of floods shelters and the establishment of community-based disaster management committees to enhance flood preparedness, (Alam and Collins, 2010). Therefore, construction of flood shelter and establishment of community-based disaster management committees in Bangladesh acts as safety nets for vulnerable population so as to reduce loss of life and alleviate the immediate suffering of affected communities.

According to Chakraborty et al., (2021), technological advancement has played a crucial role in improving flood preparedness. Through the use of Satellite-Based sensors, Geographical Information System (GIS), the use of real time imagery satellites has enhanced the dissemination of warning information to the community. For instance, the Global Flood Awareness System operated by the European Commission, provides real time flood forecasts that helps in decision making at global level. Adding on, Rahman et al., (2023), note that community-based preparedness is essential to effective flood risk reduction through combining local knowledge with scientific data. Flood preparedness measures including participatory mapping, community drills and flood education programs played a pivotal role in building local capacity and enhancing resilience as these are the appropriate measures needed to be undertaken before, during and after flooding events. For instance, in South Asia, community flood preparedness programs have reduced mortality and economic losses, by empowering local community to be proactive during flood events, (Singh and Ahmed, 2021). More so, World Bank (2021), highlighted that investing in resilient infrastructure is a cost-effective means of reducing disaster impacts. Scholars such as Kabisch et al., (2021), noted that nature-based solutions, such as wetland restoration and urban green spaces, are being used to enhance traditional engineering approaches.

SADC, (2020), states that at regional level, the Southern African Development Community has implemented the regional early warning system, to enhance flood preparedness and response at the region. This early warning system utilizes satellite data, hydrological models and communication networks to disseminate timely warning information to the community. Adding on, the African Risk Capacity offers designed insurance products to help African countries manage

the financial risks associated with floods impacts, (ARC, 2021). According to Raul et al., (2021), the Asia-Pacific region countries had invested in flood management strategies including effective dissemination of warning messages to the community, resilient structures and tailored community initiatives. For instance, the government of Vietnam has developed flood management plan that includes construction of dykes, the relocation of vulnerable communities and the use of drought tolerant seeds, (Nyuyen et al., 2020). Furthermore, a study conducted by the European Environment Agency, (2012), showed that many European countries implement initiatives including the implementation of environmentally friendly strategies to reduce flood impacts. These include the restoration of wetlands, the creation of urban green spaces and the implementation of sustainable drainage systems, (European Environment Agency, 2020).

ASFPM, (2020), examined the flood management policies of several countries, including the United States, which has invested heavily in the construction of flood control infrastructure, such as dams, levees, and flood walls. Additionally, the United States government has implemented the National Flood Insurance Program, for financial assistance to individuals and communities affected by flooding, (FEMA, 2021). India has developed early warning systems, the implementation of community-based risk reduction initiatives, and the promotion of integrated water resource management to enhance community resilient, (UNDP, 2021). Scholars such as Penning-Rowsell and Priest, (2021), articulate that the United Kingdom government implemented flood management initiatives that including built-up of functional drainage systems, the promotion of property level flood protection measures and the enhancement of emergency response capabilities. In the Netherlands, for example, the government has implemented efforts such as river program, which involves the widening of rivers and the relocation of communities living in flood-prone areas to enhance the country's flood resilience, (De Bruijn et al., 2023).

According to WMO, (2023), countries such as China and Japan have invested flood preparedness measures including early warnings systems, the improvement of flood control infrastructure, the promotion of community-based risk reduction initiatives. For instance, the government of China implemented the spongy city program to enhance urban flood resilience through the integration of green infrastructure and sustainable drainage systems (Lie et al., 2024)). The recent flood in Nigeria showed that early warnings system can be used to enhance the effectiveness of flood preparedness. In early 2023, the Nigeria Hydrological Service Agency published its Annual Flood

Outlook and predicted a major flooding. The disseminated information indicated that out of 36 states in Nigeria, 32 were going to be affected NIHSA (2023). As a result, the National Emergency Management Agency disseminated these flood warning messages and enumerated necessary measures to mitigate its impacts, (The Guardian, 2023). In Zimbabwe the government has established the Civil Protection Unit to coordinate disaster risk management efforts, including flood preparedness and response (CPU, 2021). The CPU has developed the National Disaster Risk Management Plan, which act as a framework for providing strategies and guidelines for disaster risk reduction, including for floods. Additionally, the government has invested early warning systems, flood resistant infrastructure and community-based disaster risk management initiatives to enhance the country's preparedness (Government of Zimbabwe, 2020). Also, indigenous knowledge system is widely used as an early warning system that disseminate information to the communities especially during floods. For example, in Muzarabani district, Zimbabwe, easterly winds indicate an imminent storm, which result in severe flooding as well as torrential rainfall (Mudavanhu et al., 2015). In Zimbabwe five main pieces of legislation have been enacted to control land use thereby reduce human vulnerability to hazards. The constitution of Zimbabwe has amended different Acts for reducing the occurrence of disasters through protecting environment, regulating building design, and prohibiting settlements and stream bank cultivation so as to reduce susceptibility of the community to flood impacts, (Tasantab, 2019). The main aim is to reduce vulnerability of people to hazards.

Within the Chitsungo community in Zimbabwe, local institutions have played a pivotal role through enhancing flood preparedness, (Mavhura,2021). Studies have highlighted the efforts of community-based organizations such as use of indigenous knowledge system, traditional leaders, and government agencies in developing early warning systems and disaster risk reduction initiatives, (Macherera & Chimbari, 2016). However, the effectiveness and sustainability of these community interventions remain issues that needs to be addressed, due to barriers such as resource availability, institutional coordination, and community engagement. The literature review suggests that while there is action in implementing flood preparedness measures at the local level, there are still gaps and barriers that need to be addressed. These local institutions often face challenges including financial resources, technical expertise, and access to information and technology, which hinders the effectiveness of flood preparedness efforts (Smith et al., 2021). Furthermore, issues

such as community participation, gender inclusivity, and the integration of indigenous knowledge into disaster risk management strategies remain areas of concern.

## **2.6 Barriers to effective flood preparedness**

At global level, one of the barriers to effective flood preparedness is the lack of coordination and communication among various stakeholders, including governments, non-governmental organizations, and local communities. A study by Smith et al., (2021) found that poor coordination and information dissemination between different levels of government and with local communities often hinders effective disaster preparedness and response efforts. Adding on, unfair distribution of resources and lack of funding is also a barrier that hinders the implementation of effective flood preparedness initiatives. A report by the United Nations Office for Disaster Risk Reduction, (2022), states that many developing countries lack financial resources and technical capacity to invest in effective flood preparedness and response strategies. The difference in access to resources and funding can exacerbate the vulnerabilities of marginalized communities and hinders global efforts to enhance flood resilience and preparedness. According to Donner et al., (2018), economic factors such as financial constraints are also a barrier to effective flood preparedness. For instance, those with access to resources are more likely to implement tailored initiatives to reduce impacts of flooding. The study conducted in Rio Grande Valley, point out that community with adequate resources effectively engage in risk reduction efforts, (Lavariega- Montfort et al., 2018). While low-income earners find it difficult to engage in preparedness measures including necessary supplies, improved infrastructure and insurance to reduce flood impacts.

More so, the impact of climate change, on the frequency, severity, magnitude and pattern of flood events has caused a significant challenge in implementing flood preparedness efforts. (Jones et al., 2023), note that the increasing unpredictability and severity of flooding caused by change in weather has impacted the capacities of many communities and governments to effectively plan and respond to disasters impacts. Another barrier that hinders effective flood preparedness is lack of public awareness and engagement in flood preparedness activities. The International Federation of Red Cross and Red Crescent Societies, (2024) conducted a survey which highlights that, many individuals and communities have limited knowledge of flood risk and necessary flood preparedness measures, hindering their ability to take proactive measures to protect themselves and their property. Due to different factors, one person in the community could view a flood as a

high destructive disaster and take appropriate measures to mitigate flood impacts while low risk perception hinders the preparedness efforts of other community members. According to, Chang. et.al., (2022), note that risk perception can be shaped by different flood preparedness initiatives.

At regional level, lack of cross-border coordination and cooperation is one of the barriers that hinders effective flood preparedness among neighboring countries and substantial authorities. Ramirez and Nguyen, (2021) found that differences, in disaster management policies early warning systems, and resource allocation across regional boundaries often resulted in ineffective flood response efforts. Adding on, equitable resource allocation and capacity-building initiatives are other barriers to effective flood preparedness at regional level. Jones and William, (2024), note that regional disparities in economic development, institutional capacities, access to funding reduces investment in flood mitigation and response measures, increasing the susceptibility of marginalized communities.

Another barrier to effective flood preparedness is the lack of updated data base on flood risk information at the regional level. A study conducted by the United Nations Economic and Social Commission for Asia and Pacific, (2022), revealed that many regions struggle to collect, analyze and disseminate comprehensive data on flood hazards, vulnerabilities and impacts, hindering their ability to develop targeted and tailored preparedness initiatives. Furthermore, the lack of stakeholder engagement and community participation at regional level hinders flood preparedness initiative. Research by the International Federation of Red Cross and Red Crescent, (2025) states that many regional-level disaster management efforts fail to adequately incorporate the community concerns and local knowledge of many local communities, hindering the effectiveness and sustainability of preparedness measures.

At national level lack of coordination and integration between different government departments responsible for disaster management affects flood preparedness. A study by Chen and Li (2021), found that decision making and information sharing among various government entities often led to poor policies formulation, unfair resource allocation and ineffective response efforts during flood events. Another challenging barrier is insufficient investment in flood mitigation and preparedness measures at national level. A report by the World Bank (2022) emphasizes that many countries do not consider disaster preparedness, they allocate small portion of their national budgets to flood risk reduction, prioritizing post disaster relief and recovery over proactive

prevention strategies. Due to financial constraints, the implementation of tailored improved infrastructure, early warning systems and community-based resilience-building initiatives that can be meant to enhance flood preparedness at national level can be limited.

Additionally, the challenge of integrating scientific data and risk information into national flood decision making hinders effective flood preparedness among different countries. Scholars such as Jones and Williams (2024), note that many national governments struggle to effectively translate complex climate and hydrological projections into actionable policies and plans. Due to difficulties in combining scientific data with policy implementation, this can sabotage the ability of national authorities to prepare and respond flood risk. Lack of public awareness and community engagement in national flood preparedness initiatives is also another challenge to engage in flood preparedness activities. A study done by the International Federation of Red Cross and Red Crescent Societies, (2025), explain that many citizens have limited understanding on appropriate measures to undertake to minimize the impacts of disasters, hindering their ability to take proactive measures to protect themselves and their communities.

At the community level, the Chitsungu community in Zimbabwe has faced challenges to effective flood preparedness, (Mavhura, 2021). Studies have highlighted the limited financial resources and technical expertise of local institutions, as well as the challenges in engaging the community and addressing cultural and socioeconomic barriers, (Macherera & Chimbari, 2016). While local institutions have made efforts to address these challenges, the effectiveness of their interventions and the sustainability of these efforts remain ongoing concerns there are gaps and limitations persist, particularly in terms of resource availability, institutional coordination, community engagement, and the long-term sustainability of flood preparedness initiatives.

## **2.7 Contribution of local institutions to effective flood preparedness**

Globally local institutions play a pivotal role in contributing to effective flood preparedness through the implementation of different strategies that enhance flood preparedness. This has been of great concern in recent years, researchers and policy makers has discussed the importance of achieving satisfactory level of readiness to respond to natural disasters such as flooding. (Smith et al., 2020, Alam et al., 2021 and Kelman et al., 2022), highlighted the roles of local institutions, such as supporting the vulnerable groups, coordinating relief efforts and resource allocation that contribute to effective flood preparedness.

Research conducted by, Jha et al., (2020) and Bhatt et al., (2021), postulate that mobilization and engagement of local communities is one of the important roles played by local institutions in contributing to effective flood preparedness since understand better the unique needs and vulnerabilities of their communities, as this can lead to development tailored initiatives to enhance flood preparedness. This includes organizing community-based early warning systems, providing training and education on flood related risks and response measures, and facilitating the development of local disaster management plans, (Cao et al., 2022; Dube et al., 2023). Adding on, local institutions are responsible for integrating global and national level flood preparedness policies and the realities of local communities on the ground, (Lassa et al., 2020 and Saha et al., 2021). Therefore, through identifying concerns of local communities, providing feedback and insights to policy makers, local institutions can help to ensure that global and national level flood preparedness strategies are more responsive and effective to reduce flood impacts, (Pandey et al., 2022 and Yadav et al., 2023).

In addition, local institutions play a pivotal role in contributing to effective flood preparedness through use of their knowledge of local resources, networks, and social dynamics to facilitate the effective implementation of flood preparedness measures, (Mohanty et al., 2020; Gupta et al., 2021). This includes mobilizing volunteers in the community, coordinating relief efforts, and ensuring the equitable distribution of resources and support to vulnerable communities, (Chatterjee et al., 2022; Majumdar et al., 2023). The contribution of local institutions to effective flood preparedness at the global level is one of the important initiatives meant to reduce flood impacts. Therefore, local institutions effectively engage in implementation of flood preparedness measures through community engagement, integrating policy and practice, and make use of local resources and networks, (Mohajerani et al., 2021; Saroha et al., 2024).

The contribution of local institutions in enhancing regional flood preparedness has been of concern among researchers and policymakers in recent years. (Alam et al., 2021, Bhatt et al., 2021 and Cao et al., 2022), articulated different roles of local institutions that contribute to effective flood preparedness including community-based early warning systems, education and training and facilitating development of disaster management plans. This helps local communities to achieve a satisfactory level of readiness to respond to flood impacts. Local institutions mobilize and engage local communities in disaster preparedness programs to foster sense of ownership to the

community members so that they can take proactive measures. Local institutions understand better about the unique needs and vulnerabilities of their communities, and this helps in developing tailored initiatives such as community based early warning system and education and training to enhance flood preparedness at the regional level, (Jha et al., 2020 and Chatterjee et al., 2022). Additionally, local institutions are more important in integrating the gap between national level flood preparedness policies and the realities of local communities within a region, (Lassa et al., 2020 and Saha et al., 2021). Therefore, inclusion of needs and concerns of local communities and providing feedback and insights to policymakers, helps local institutions to ensure that regional-level flood preparedness strategies are more responsive and effective, (Pandey et al., 2022 and Yadav et al., 2023).

Scholars such as, Mohanty et al., 2020 and Gupta et al., (2021), shows that use of local knowledge, regional resources, networks and social dynamics is another role played by local institutions in contributing to effective flood preparedness. This includes coordination relief efforts, mobilizing volunteers, and ensuring the equitable distribution of resources and support vulnerable groups within the region, (Cao et al., 2022 and Mohajerani et al., 2021). In addition, local institutions are responsible for fostering collaboration and coordination with different in line stakeholders, including local government, rural district councils, NGOs and community-based organizations so as to implement effective flood preparedness initiatives. Therefore, a study conducted by, Kelman et al., (2022) and Saroha et al., (2024) shows that sharing of knowledge, resources, and best practices, helps local institutions to enhance the overall effectiveness of regional flood preparedness efforts.

Another argument by Alam et al., (2021), Bhatt et al., (2021) and Cao et al., (2022), note that they are various ways in which local institutions contribute to effective flood preparedness including building resilience and mitigating the impacts of floods at the national scale. Furthermore, local institutions mobilize and engage local communities to engage in disaster risk reduction and preparedness activities so that they can be aware and alert of flooding warning information. Local institutions, such as community-based organizations, NGOs, and local government agencies, understand better the unique needs and vulnerabilities of their communities, and can develop tailored strategies to enhance flood preparedness at the national level, (Jha et al., 2020 and Chatterjee et al., 2022). This includes organizing community-based early warning systems,

providing training and education on flood-related risks and response measures, and facilitating the development of national disaster management plans, (Dube et al., 2023 and Majumdar et al., 2023). A study conducted by, Lassa et al., (2020 and Saha et al., (2021), note that local institutions are responsible integrating the gap between national level flood preparedness policies and realities of local communities on the ground,

A study conducted by, Mohanty et al., (2020 and Gupta et al., (2021), highlighted those local institutions use local knowledge, national resources, networks and social dynamics to facilitate the effective implementation of flood preparedness measures. This includes mobilizing volunteers, coordinating relief efforts, and ensuring the equitable distribution of resources and support to vulnerable communities across the nation, (Cao et al., 2022 and Mohajerani et al., 2021). Furthermore, local institutions can foster collaboration and coordination among different stakeholders at the national level, such as local governments, NGOs, and community-based organizations as this helps to increase efficiency by reducing duplication of work and it ensures that all the stakeholders are aligned with the objectives.

Local institutions play a pivotal role in enhancing flood preparedness at the community level especially Chitsungo community. This has been discussed by several researchers and policymakers in recent years. Different strategies have been implemented for capacitating the communities to build sense of ownership so that they can respond to flooding. There are various ways including resource allocation and education and training in which local level organizations and institutions can contribute to building resilience and mitigating the impacts of floods within this specific community, (Dube et al., 2023, Majumdar et al., 2023 and Mohajerani et al., 2021). Local institutions in Chitsungo mobilize and engage the local communities to enhance resilient so as to minimize disaster impacts. Local institutions, including community-based organizations, NGOs, and local government agencies, often understand better the unique needs and vulnerabilities of the Chitsungo community, and can develop tailored initiatives to enhance flood preparedness, (Lassa et al., 2020 and Saha et al., 2021).

According to Mavhura et al., (2017), Chitsungo community in Zimbabwe has been discussed several studies examining the role of local institutions in flood preparedness. These studies explained the efforts that are being initiated by government agencies, community-based organizations, rural district council and NGOs in developing and implementing flood preparedness

strategies such as evacuation plans, and effective dissemination of warning information to the community. Therefore, the initiatives of these local interventions and gaps in institutional coordination and community engagement remain ongoing areas of research, (Mavhura, 2021).

## **2.8 Chapter summary**

Globally, the frequency, intensity, magnitude and pattern of flooding disaster continue to be felt more than before, affecting different households in different communities threatening the developments of future generations. The literature reviewed showed adverse impacts posed by flooding disaster to the different households including loss of lives, property damage, infrastructure destruction, injures, psychological effects and even disturbing the functioning of the environment to mention the few of these impacts. This shows that there is a research gap in the literature that needs to be addressed to assess if these households in the community are prepared enough to face flooding disasters for effective response and minimize the adverse impacts of flooding on households.

## **CHAPTER 3: METHODOLOGY**

### **3.1 Introduction**

The main purpose of this chapter is to introduce the research methodology used such as the mixed approach which combines both qualitative and quantitative methodology regarding the assessment of flood disaster preparedness of households in Zimbabwe. The approach explores much of the information of the level of existing flood preparedness measures in the community, barriers to effective flood preparedness and the effectiveness of local institutions in contributing to effective flood preparedness in Chitsungo community in Mbire District.

This chapter is going to explain in-depth about the study area, research approach, design target population, sampling procedure, data collection instruments, methods of analysis and ethical considerations.

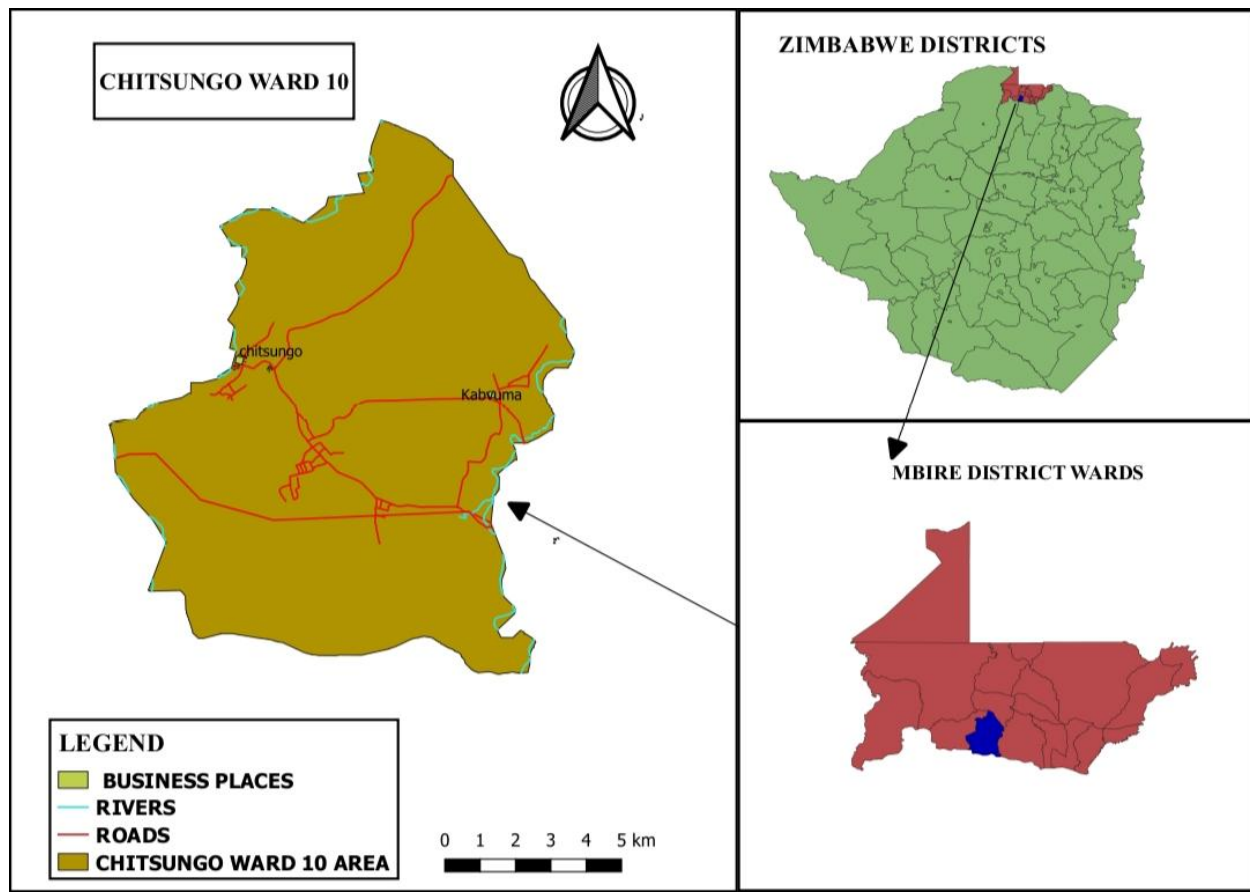
### **3.2 Description of the study area**

The study is going to be conducted in Chitsungo community in Mbire District, which is found in Mashonaland Central Province located in northern part of Zimbabwe. The district lies 250 km north of Harare towards Zambian and Mozambique boarder. The district shares its boundaries with Zambia's Luangwa district to the north, Mozambique's Tete province to the northeast, Muzarabani district to the east, Guruve district to the south and to the west Chiwore safari area in Hurungwe district. The Mbire District consist of 17 rural wards and its areas is about 4,695.87km<sup>2</sup>. The district was chosen to be the study area due to the frequent occurrence of natural and hydro-meteorological disasters such as flooding which resulted in serious disruption of the functioning of the environment, wide spread of material, loss of property, loss of lives and destruction of infrastructure and socio-economic impacts to the community households.

The Mbire District fall under natural region Va which is characterized by extensive farming and low rainfall of about (650mm). Mean annual rainfall received is about 450 to 650mm and have mid-day time of about TC 20 Degrees Celsius to 29 Degrees Celsius due to global warming induced rains which are accompanied by very hot dry spells making it one of the driest districts in the country. Some parts of the district are prone to flooding such as ward 1,2,3,5,9,11,12,13,14,15, and 16 as the settlements are along the rivers and are low lying areas. Of concern also these areas are affected by flooding; Musengezi, Chidodo, Kasemberere, Kanyemba and Chitsungo. The district generally experiences severe droughts and mid-season dry spells hence it is suitable for

livestock production as it is intensified by growing of fodder crops. The livelihood base of the district consists of, crop production, livestock production and cattle ranching, wild foods. Also, Mbire District is one of the most remote and underdeveloped districts in Zimbabwe, despite the abundant natural resources (wildlife) it is endowed with. A good indication of this underdevelopment is its poor road and communication infrastructure. The district is characterized by clay, loam and sandy soils that are susceptible to flooding to their impermeability and lack of vegetation cover.

The target population was drawn from Mbire District population. According to the ZIMSTAT, (2022) statistical report, Mbire 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 Chitsungu community has 1 488 households with a total of 6 119 people. Also, the report from 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.



*Figure 3.1 Mbire District Chitsungo community ward 10*

### 3.3 Research Approach

Research approach is defined as a framework of methods and techniques used by a researcher to combine various components of research to address a research problem in a reasonably logical manner Bhat, (2019). A sequential mixed method research approach is going to be used which combines quantitative and qualitative methods of gathering information concerning flood preparedness in the community households of Mbire District. A sequential method was used whereby quantitative research method conducted first and results were analyzed and the results was used to explain in detail the qualitative research. Top-down approach was used to explain that conclusion must follow a cycle.

Research instruments such as questionnaires were used to gather both qualitative and quantitative information to assess the level of flood preparedness among community households. Quantitative involves collecting data, measuring it using statistical analysis to confirm or reject hypothesis. Key informant interviews were carried out with key stakeholders including local government officials,

councilors authorities and community leaders to gather in-depth information about community flood preparedness strategies and challenges. Creswell, (2018), note that qualitative study allows the researcher to explore the behavior, perspectives, feelings, experiences of people, in the bid to understand their perspective. Observations were carried out to observe the level of flood preparedness through existing community resources, flood preparedness measures including both structural and non-structural measures and barriers to effective flood preparedness. And last focus group discussions will be used to gather data on barriers to effective flood preparedness. The data collection efforts will ensure efficient and effective ways so that data will be collected at low cost while saving time.

### **3.4 The Study Population, Sample and Sampling Techniques**

The study population consisted of 7 villages in Chitsungo Mbire District comprising of 1432 community households, (ZimStats, 2022). Community household sizes ranged from 3 to 5 from these villages with the age from 18 years to 65 years and above, who were residents of this community during the time of research. The reason for choosing to select these age groups is because they have much knowledge and sufficient knowledge about flooding, socioeconomic status, geographic location and other relevant demographic factors that affect level of flood preparedness. The study used a sample of 10% of 1432 households to get 143 households that were randomly selected and surveyed in Chitsungo community. A sample of 10% was selected because Kish (2001), argues that for heterogeneous populations, small samples are sufficient for many purposes. This was also supported by Sharma, (2017), who states that, it is cost effective and it enhances data quality. Stratified sampling was then done to ensure better representation of the study sample, 20 participants were randomly selected per each village. Community leaders, community members, councilor, local government staff participated in the survey. Thus a total of 7 traditional leaders, 1 councilor, 1 local government staff and 143 household representatives were surveyed.

### **3.5 Research Methods**

To assess the level of flood preparedness, the study employed a mixed-methods approach. The following research methods were utilized: Questionnaire Survey: A structured questionnaire was administered to a representative sample of the local community to gather quantitative data on their awareness, knowledge, and practices related to flood preparedness, Key Informant Interviews: In-

depth interviews were conducted with relevant stakeholders, such as local government officials, emergency management personnel, and community leaders, to obtain qualitative insights into the existing flood preparedness measures, challenges, and opportunities, Focus Group Discussions: Focus group discussions were organized with diverse community groups, including vulnerable populations, to understand their perceptions, experiences, and suggestions for improving flood preparedness, Observations: The research team conducted on-site observations to assess the availability and condition of flood-related infrastructure, early warning systems, and emergency response facilities. Data Analysis: The quantitative data collected through the questionnaire survey was analyzed using the Statistical Package for Social Sciences (SPSS), enabling the researchers to determine the level of flood preparedness among the targeted population. The qualitative data from the interviews and focus group discussions was thematically analyzed to identify key patterns and insights. The triangulation of these multiple data sources and research methods ensured the validity and reliability of the findings, providing a comprehensive assessment of the level of flood preparedness in the study area.

### **3.6 Questionnaire**

The research used the questionnaire to collect information concerning, existing flood preparedness measures in the community, the barriers to effective flood preparedness and the contribution of local institutions in contributing to effective flood preparedness on households in the community. Innum, (2014), states that a questionnaire is a meticulously designed document consisting of a series of questions specifically intended to elicit responses from research participants, mostly for the purpose of gathering data. The questionnaire was designed and tested in the field and then shared with the office of Ministry of Local Government for their authorization, and feedback. The challenges were discovered and corrected.

The questionnaire consisted of split questions generally comprising of yes or no questions to assess the existing flood preparedness measures in the community. The questionnaire was made up of three sections based on research questions, namely Section A for assessing the existing flood preparedness measures, Section B for barriers to effective flood preparedness and Section C for contribution of local institutions for effective flood preparedness. To improve the instrument validity, the researcher was helped by the traditional leaders, councilors, head of department at ministry of local government to check on the relevance of the information. The questionnaire was

pretested to 4 traditional leaders one from each village and 10 household members two from each village to be selected using random sampling technique.

### **3.7 Interviews**

Interviews were conducted to gather primary data on flood disaster preparedness from key stakeholders. According to Annum (2014), an interview is a conversation between two people where one asks questions and the other responds. This study used key informant interviews, as described by Kothari (2004), involving predetermined questions and standardized recording techniques. The interviews were administered by the researcher to 10 heads of department at the Office of the Ministry of Local Government and 15 traditional leaders, totaling 25 participants. These stakeholders were chosen for their roles in overseeing and governing the rural community of 1432 households. The interviews explored existing flood preparedness measures, barriers, and local institutional contributions, ensuring confidentiality and using data triangulation to enhance validity.

### **3.8 Observations**

The research also used observations to collect information in the field. The research was able to observe the currently existing flood preparedness measures and resources in the community such as physical structures, observing the events and behaviors in the community. Turner (2017) notes that direct observations are a means of collecting data naturally occurring behavior within their usual context. Thus, direct observation was used to collect data for this study. The observation seeks to find out both structural and non-structural flood preparedness measures in the community, barriers to effective flood preparedness and some of the identified roles of local institutions. Since the observation is process being done on a daily basis using information gathered around the community, the researcher will be able to gather much data on day operation of the households and other discussions concerning flood preparedness. By conducting observations on community households, it allows collecting data checking from one another as it allows collecting data in groups with less verbal report. The observation checklist, consisted of preparedness measures such as, existing infrastructure, community capacities, flood early warning systems, available legislation and any community plans in the community. Observations from field walk will be also used to show the resources and measures available, barriers and the role played by local institutions in contributing to effective flood preparedness.

### **3.9 Focus group discussions**

Focus group discussion was also used for data collection. Scholars such as Punch, (2004), note that focus group discussion is defined as a way of data collection with a group of people (typically 6-8 people). Morgan, (1988) argues that quality information can be gathered where there are more people sharing ideas. Focus group discussions was used because they allow for the collection of data from multiple perspective and they can be a way to explore complex issues in more depth. In addition, due to social and cultural differences, focus group discussions allow the interaction of different cultural beliefs, sharing their experiences, pertaining their perceptions on the level of flood preparedness and it helps to gather more information about existing flood preparedness and resources, barriers to effective flood preparedness and the effectiveness of local institutions in contributing to effective flood preparedness.

### **3.10 Reliability and Validity**

The researcher used the internal validity for accurate measurement. The validity of data will be based on triangulation of various data sources by considering the evidence from other sources and using it to build a coherent justification of themes according to Creswell (2018). Another note that if the themes are going to be established using several studies of data from participants, then the process will be explained as adding validity to the study. A pilot test was conducted using the research instruments. For reliability of data, the sorting of the data base, a careful understanding and reading of text, coding, categorization and organizing of raw data into word files from questionnaires, key informant interviews, observations, focus group discussions and 5-licket scale were reviewed.

### **3.11 Ethical Considerations**

Conducting research responsibly and ethically is a paramount consideration for the researcher. By having a deeper understanding on the potential impact of the study, on local community households, a comprehensive framework will be established to provide guidelines and ensure compliance to ethical principles. The researcher will firstly seek to build rapport with all line ministry stakeholders. The researcher will make proper communication with head of departments at the office of ministry of local government, to gain access to the community households. Permission will be found by consulting, District Development Coordinator, ward councilors, ward coordinators and the traditional leaders in the community. The researcher will make informed

consent so that participants and stakeholders understand about their role in flood preparedness data collection process. Also, the researcher will consider, privacy and confidentiality, respect of cultural diversity and local traditions, transparent and accountability and environmental protection. This will ensure respect and dignity to the participants so that the researcher will adhere to the principles to avoid showing bad picture whether the participants are just used to achieve research objectives.

### **3.12 Chapter Summary**

This chapter explained information about the research approach, design, sampling techniques, and research instruments that are going to be used for data collection. The research used mixed-approach methods concerning the assessment of flood disaster preparedness in community households in Zimbabwe. The data will be analyzed using the SPSS and then will be presented in the form of graphs, pie charts and tables.

## CHAPTER 4: DATA PRESENTATION AND ANALYSIS

### 4.1 Introduction

This chapter presents and analyses the results from the questionnaire survey, key informant interviews, observation and focus group discussion of this research to specific objectives, on flood preparedness on community households in Zimbabwe, a case of Chitsungo community of Mbire District. Data analysis in this chapter involves a combination of different techniques such as narrative and interpretative. The findings are categorized, under the main components of disaster risk reduction on flood preparedness.

### 4.2 Flood preparedness measures and resources

The findings in Figure 4.2 reveal that community households have inadequate flood preparedness measures and resources. Only 35% of households have access to measures such as, Education and training (4.6/7), Installation of sandbags (2.2/7, though still relatively low), Awareness (3.4/7), Functional storm drains (4.5/7) and Communication strategies (4/7), In contrast, 65% of households lack essential preparedness measures and resources, including, Evacuation plans, Insurance coverage, Building codes, Collaborative networks, Flood monitoring technology, emergency shelter, Drills, Community resilience plans, A key informant noted that available measures are often limited, homemade, or reliant on government and NGO support. Approximately 80% of respondents reported inadequate resources and preparedness measures. The most significant gaps were in, evacuation plan, insurance coverage, building codes and collaborative networks. These findings highlight the need for enhanced flood preparedness measures.

| Preparedness measures and resources available in the community |           |                                            |
|----------------------------------------------------------------|-----------|--------------------------------------------|
| Flood Preparedness Resources Available                         | Frequency | Flood Preparedness Resources Not Available |
| 1. Sand bags                                                   | 2.2%      | 1.Evacuation plans                         |
| 2. Storm drains                                                | 4.5%      | 2.Insurance cover                          |
| 3. Government and NGO support                                  | 5.0%      | 3.Necessary medication                     |

|                             |      |                               |
|-----------------------------|------|-------------------------------|
| 4. Awareness                | 3.4% | 4.Emergency shelter           |
| 5. Communication strategies | 4.0% | 5.Drills                      |
| 6. Education and training   | 4.6% | 6.Community resilience        |
| 7. Community committees     | 3.8% | 7.Building codes              |
|                             |      | 8.Collaborative networks      |
|                             |      | 9.Flood monitoring technology |
|                             |      | 10.First aid kit              |
|                             |      | 11.Flood disaster plan        |

***Table 4.2 Preparedness measures and resources***

The results from the interviews conducted by key informants, shows that the community had inadequate resources and flood preparedness measures for them to be prepared for flooding such as awareness, communication strategies, education and training and storm drains. The results differ from other studies conducted, and the variation can be contributed by financial constraints since the community is marginalized. The community members face challenges such lack of funding and lack of expertise which affect the allocation of resources and the implementation of effective flood preparedness measures. Also, lack of infrastructure such as roads, communication networks, different perceptions, awareness and experiences about flooding among community households affects preparedness efforts.

#### **4.2.1Infrastructure**

The findings from this research shows that the community has a mix of elevated homes with functional drainage systems and non-elevated homes with non-functional drainage system. About 35%responded that the community had elevated homes above flood level and proper drainage system whilst 65% showed that the community do not have elevated home and functional drainage system. Another key informant said that, *“Our community had inadequate drainage systems, sometimes one could find only one or no functional drainage systems, thus increasing the vulnerability of our households to flooding”*. The results from the observation shows that there is the absence of proper drainage systems in the community to reduce the impact of flooding since the community is close by large river (Hunyani) that increases the community household’s exposure to flood disasters. This was the reason for the damage of the community infrastructure

by the previous flooding emergencies. About 70% of the respondents ranked as having elevated homes with minimal elevation and drainage system with limited capacity that are highly vulnerable to flooding whilst 30% ranked as having homes with moderate elevation and drainage system with moderate capacity.

| Indicator                                 | Frequency | Description                                                                 |
|-------------------------------------------|-----------|-----------------------------------------------------------------------------|
| Elevated home and Drainage system         | 35%       | Elevated homes above flood level with functional drainage system            |
| Non-elevated homes and no drainage system | 65%       | Home that are not elevated above flood level and inadequate drainage system |

**Table 4.2.1 Infrastructure**

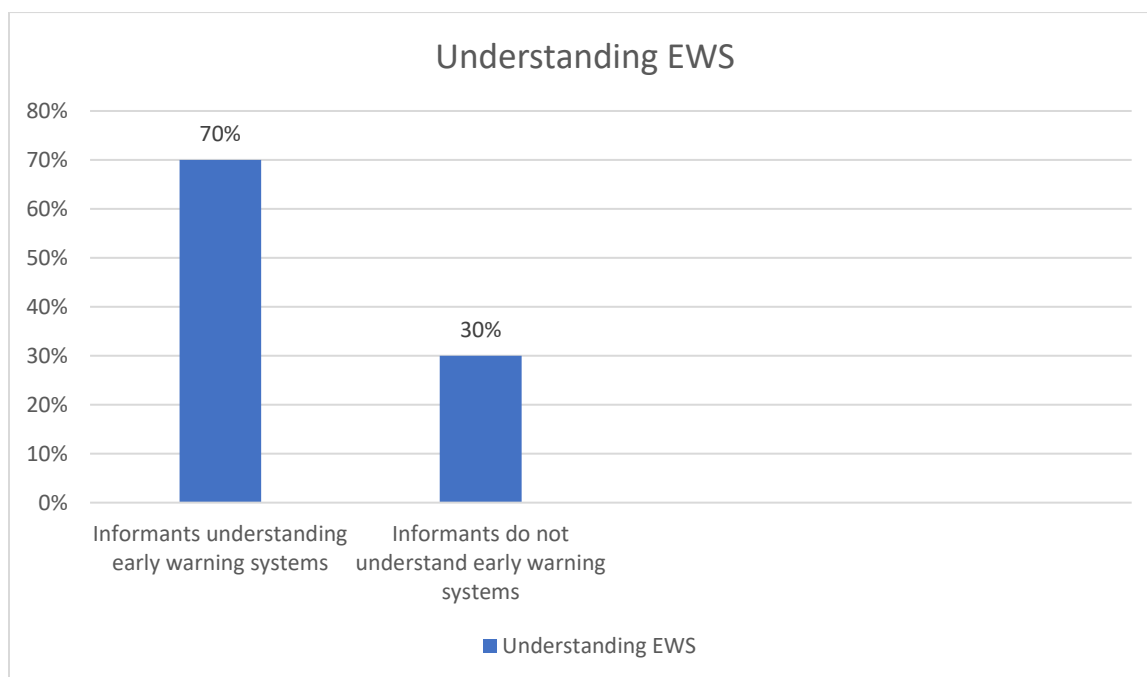
The study highlight that the community has inadequate infrastructure, despite having a limited number of households with elevated houses above flood level and storm drains. The findings from the respondents and observation shows that the community lacks critical infrastructure that reduces the occurrence of flooding and their impacts to the community such as dams, dykes, flood walls and more of functional drainage system that easily diverted floodwater out of the community. This shows the difference from other studies conducted as one of the respondents said that *“The reason for not having adequate infrastructure in Chitsungo is because some of the advanced infrastructures are too expensive hence due to financial constraints in the community implementing them is a challenge”*.

#### **4.2.2 Flood preparedness plan**

The findings from this study through focus group discussion indicate that the respondents are not aware of any community flood preparedness plan. Another informant said that, *“We had not developed any flood disaster preparedness plans because of limited access to resources to undertake activities of coming up with flood preparedness plan”*. About 70% of the respondents indicated the need of community-specific flood preparedness plans such as evacuation routes and shelter to reduce the impacts of flooding. This differs from other studies conducted as one of the key informants said *“We need preparedness plans that suit for our community’s unique flood risks, hazards and infrastructure”*.

### 4.2.3 Early warning system

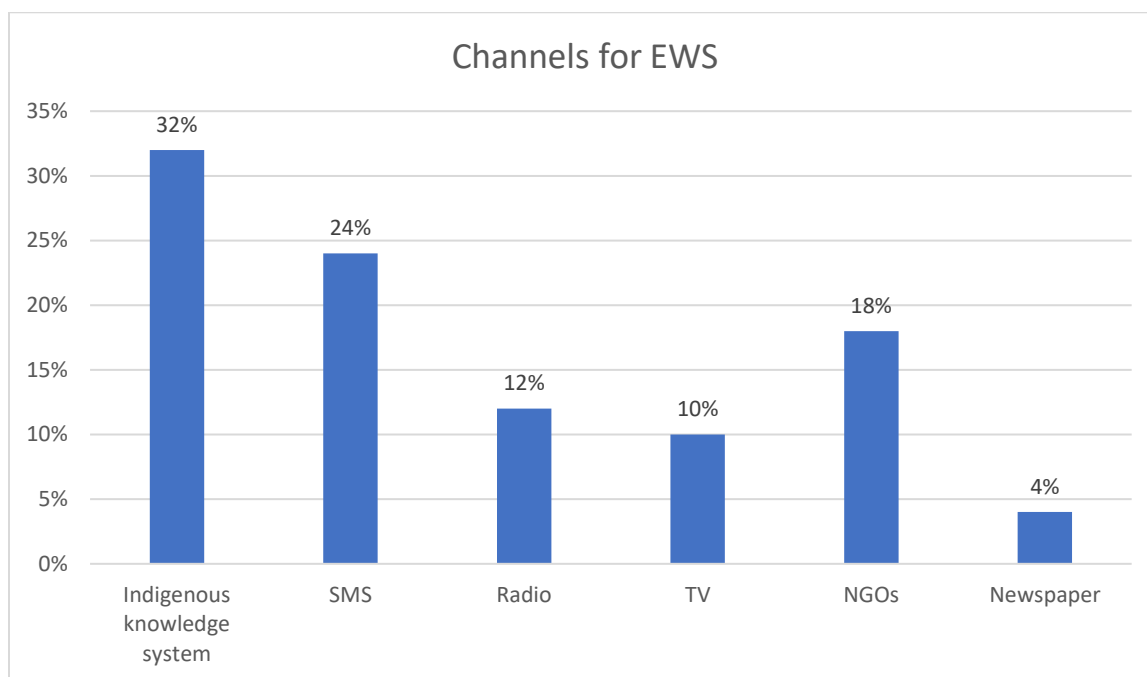
The findings from figure 4.2.3 below shows that 70% of key informants responded that there are early warning systems in the community and they understand the warning alerts when they are issued, while 30% of the respondent showed that there is no early warning system in the community and they understand early warning signals when declared. One of the key informants says that *“Having information and understanding about early warning systems in communities is because some community members live close to the traditional leaders hence information is easily disseminated even through door to door but it is difficult to those who are far as information take long to reach the destination.”*



**Figure 4.2.3 Understanding EWS**

Figure 4.2.4 shows different channels in which early warnings were being disseminated in Chitsungu to the community members. The results presented in figure 4.2.4 below shows that Indigenous knowledge systems is the most used channel for disseminating early warnings with 32%, it is culturally associated hence can be trusted and might be more accessible to everyone in the community, since this is derived from the community, there is much sense of ownership as most the communities trust local initiatives than external. The findings also show that SMS with 24% are effective in providing alerts to the community members because mobile phones are

common to the respondents. These cellphones faced challenges as one of the key informants said *“In Chitsungo we are affected by network challenge that delays the time of receiving the information and also these alerts warning messages are being sent to everyone with a line despite that the disaster is not affecting the area so this information affects us as we do not know where exactly to respond”*. NGOs 18% are also another reliable channels for EWS. Also, TV 10% and radio 12% are at times effective but are sometimes affected by shortage of power as indicated by one of the key informants who said *“We are facing electricity challenges as this affect TV and radio to communicate warning message”*. Lastly newspaper with 8% were very poor in issuing warning alerts to the community because they take long to reach the intended users due to long distance.



**Figure 4.2.4 Early warning system**

The findings from this research show that Chitsungo community in Mbire District uses indigenous knowledge systems, SMS, radio, NGO, TV and newspaper as their channels for disseminating warning information and to predict about flooding. This is similar to the study conducted by Macherera & Chimbari, (2016), highlighted the efforts of community-based organizations such as use of indigenous knowledge system, traditional leaders, and government agencies in developing early warning systems, evacuation plans, and disaster risk reduction initiatives.

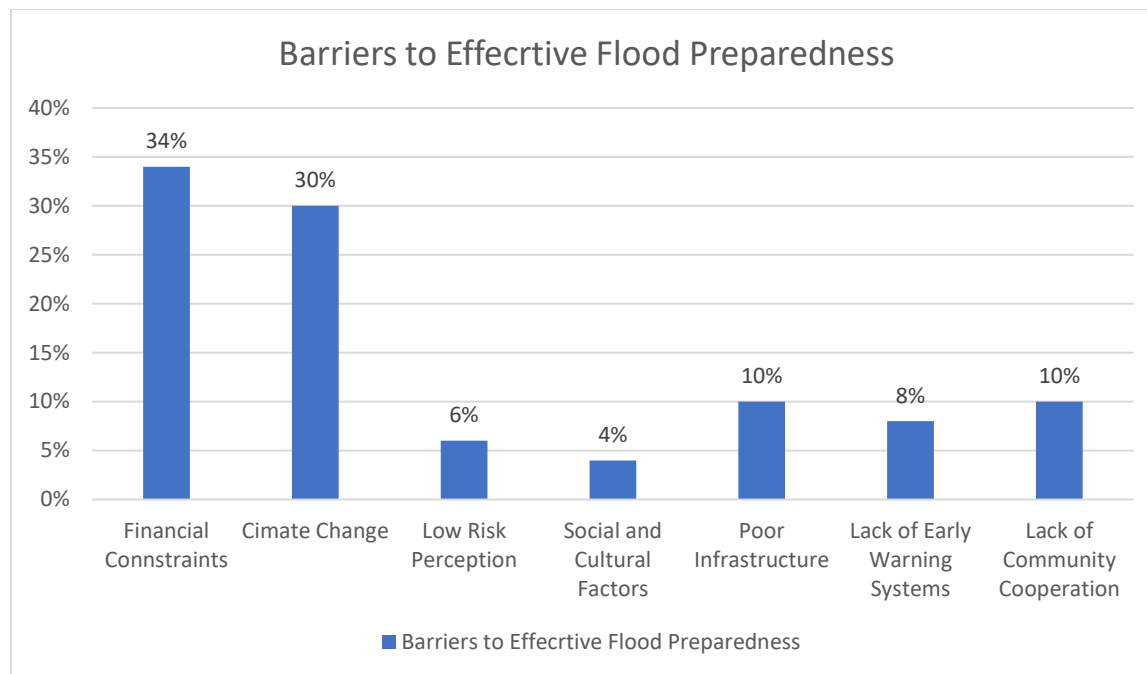
For instance, the respondents from the interviews with the key informants, 70% indicated that they use indigenous knowledge systems as their channel that provide them with warning message. One of the key informants said that *“We use indigenous knowledge system especially when we see easterly birds, this indicates an imminent storm, which result in severe flooding as well as torrential rainfall”*.

#### **4.3 Barriers to effective flood preparedness**

The respondents indicated that the barriers that commonly affect households in Chitsungu Mbire District included financial constraints, climate change, poor infrastructure, lack of early warning systems, lack of community cooperation, low risk perception and social and cultural factors. About 54% of all the respondents indicated that financial constraints and climate change had affected much the community. One of the key informants said *“As community members, financial constraints and climate change are the barriers that affect us more and reduce the ability to engage in preparedness efforts and increases the susceptibility to the impacts of flooding”*. Figure 4.2 shows the summary of barriers faced by households in the district to implement effective flood preparedness.

Interviews conducted with key informants highlighted that, lack of community cooperation and lack of low-risk perception were very dangerous waiting for the right moment to impact the community. Results shows that, 80% of community households are affected by different barriers such as economic constraints, climate change and poor infrastructure. Another key informant respondent that, *“Chitsungu is a marginalized community facing financial constrain and climate change impacts which makes it difficult to implement effective flood preparedness measures and also families prioritize daily needs over preparedness measures”*.

From the response from questionnaire and interviews with key informants, financial constraints and climate change had the greatest impact as they affect the entire operation, this was followed by poor infrastructure and community cooperation which had high challenge to the community. Also, lack access to early warnings had a great challenge to the community as they do not have time to prepare and lastly, low risk perception and social and cultural factors affects a quite number of preparedness efforts in the community



**Figure 4.3 Barriers to effective flood preparedness**

The findings from this study shows that, the community is commonly affected by different barriers that hinders their effort in trying to prepare for flooding. This is similar to a study conducted by Macherera & Chimbari, (2016), which highlighted that, limited financial resources and technical expertise of local institutions, as well as the challenges in engaging the community and addressing cultural and socioeconomic are the barriers to effective flood preparedness. One of the key informants explained that financial constraint and climate change affects much the community. *“As the community member were are mainly affected much by financial constraints and climate change as these are the barriers that leads to the existence of other barriers”*. In addition, 54% of the key informants shows that the community is being affected by low-risk perception, social and cultural difference and lack of community cooperation.

#### **4.4 Contribution of local institutions**

The respondents indicated that local institutions have contributed to effective flood preparedness in Chitsungu community. From the result from questionnaire and interviews with the key informants, 60% indicated that these local institutions were involved through resources allocation, education and training, coordination and collaboration, supporting vulnerable groups, enhancing resilience, capacity building and facilitating development. One of the key informants said *“Seven*

*institutions in our community implement different initiatives such as resource allocation, education and training and supporting vulnerable groups for capacity building and enhancing resilience and capacity-building so as to improve our flood preparedness”.*

| <b>Local Institutions</b>       | <b>Roles</b>                                                                                                                                                               |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Local Government             | <ul style="list-style-type: none"> <li>- Resource allocation</li> <li>- Enforcing policies, Laws and regulations</li> <li>- Collaboration to enhance resilience</li> </ul> |
| 2. Mbire Rural District Council | <ul style="list-style-type: none"> <li>- Facilitating development</li> <li>- Enforce building codes</li> </ul>                                                             |
| 3. NGOs                         | <ul style="list-style-type: none"> <li>- Education and training</li> <li>- Supporting vulnerable groups</li> <li>- Enhancing resilience</li> </ul>                         |
| 4. Community-Based Organization | <ul style="list-style-type: none"> <li>- Community engagement</li> <li>- Identification of resources and barriers</li> <li>- Planning for flood preparedness</li> </ul>    |
| 5. Traditional Leadership       | <ul style="list-style-type: none"> <li>- Preserving cultural heritage and traditions</li> <li>- Coordinating relief efforts</li> </ul>                                     |
| 6. Faith-Based Organisations    | <ul style="list-style-type: none"> <li>- Capacity building</li> </ul>                                                                                                      |
| 7. Community Associations       | <ul style="list-style-type: none"> <li>- Supporting vulnerable groups</li> </ul>                                                                                           |

***Table 4.4 Roles of local institutions***

The results from this research indicated that, seven local institutions have been involved in activities aimed at increasing flood preparedness in Chitsungo community such as resources mobilization, education and training and coordination and collaboration efforts. This is similar to

a study conducted by Chatterjee et al., (2022); Majumdar et al., (2023), which found that roles of local institutions include mobilizing volunteers in the community, coordinating relief efforts, and ensuring the equitable distribution of resources and support to vulnerable communities.

#### **4.5 Chapter Summary**

The chapter presented the results of the research concerning, the research objectives. It first outlines the demographic data of the study population and then articulate the existing flood preparedness measures and resources in the community households. The research also presented the findings on the barriers that affect the implementation of effective floods preparedness measures and lastly the contribution of local institutions to effective flood preparedness. The research results showed that three villages with community households are poorly prepared to face flood disaster as they lack adequate resources, preparedness measures and face barriers that affect disaster risk reduction efforts.

## **CHAPTER 5: DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents a summary of this research in line with the aim, research objectives, and drawing conclusions arising from key results to answer the problem in a discussion on the assessment of flood preparedness in community households in Zimbabwe a case of Chitsungo Mbire District. The chapter also provides recommendations concerning the key results.

### **5.2 Summary of results**

According to the research results, community households in Chitsungo Mbire District lacks flood preparedness measures and resources whereby only 35% have access to the resources such as sand bags, storm drains, awareness and communication strategies. About 65% of households lack adequate infrastructure including elevated homes and functional drainage systems to reduce the impacts of flooding. The findings show that most of respondents lack knowledge about the existing flood preparedness measures and resources including functional early warning systems, technological advancement and improved infrastructure. This knowledge gap is contributed by lack of engagement in disaster risk reduction education and training programs as well as capacity building initiatives. The community lacks flood preparedness plan in place as the respondents are unaware of any specific community plans. The community has channels of disseminating warning information however there is a wide gap in effective early warning system including indigenous knowledge system 32% and SMS 24% are channels that used for as early warning systems while TV, radio and newspaper face challenges. These community households experience flood impacts such as infrastructure disruption, loss of life and property damage. Most of the community households surveyed are located in areas characterized by gentle slopes, bare soils, near rivers and sparse vegetation cover increasing their susceptibility to the impacts of flooding. The results show that the community households face different barriers in implementing effective flood preparedness including financial constraints, climate change, cultural and social factors lack of cooperation, poor infrastructure, low risk perception and lack of early warning systems that affects preparedness efforts. The majority of the respondents have recognized that local institutions are responsible for resource allocation, coordinating relief efforts, enforcing policies, laws and regulations, facilitating development education and training and community engagement in flood preparedness, while others are unaware due to lack of technology and community gatherings.

Therefore, the overall overview of the findings suggest that community households are susceptible to flooding and they are less prepared to overcome the impacts of flooding.

### **5.3 Conclusion**

In conclusion the research shows that lack of disaster preparedness in community households is causing an increasing in impacts of flooding mainly affecting the households. Response from key informants indicated that flood awareness is not a challenge but they lack resources and capacities to better prepare for and respond to flooding which they can be impacted through designing tailored early warning system and evacuation plans. The majority had learned methods including having elevated homes and functional drainage systems, establishment of Civil Protection committees and make use of warning alerts from social media for emergency notifications of how to prepare from themselves from their households. The community lack resources to engage in preparedness efforts, this is because many of them was not trained in DRM, therefore they need increase their knowledge on DRM. Due to lack of resources in the community, this simply shows that community members do not have capacities to better prepare to reduce the impacts of flooding, loss of life and minimize injuries. Lack of structural infrastructure such as functional drainage system shows the vulnerability of community households to floods. Hence one can conclude that community households have existing flood preparedness measures and resources available including sand bags, storm drains and awareness and those that are not such as community resilience, emergency shelter and flood disaster plan. Furthermore, community households have a mix of elevated homes with functional drainage system and non-elevated home with non-functional drainage system. The community does not have flood preparedness plan and the majority of the community households understand warnings when issued. There are different channels used to disseminate warning information but indigenous early warning is mostly used. The community is affected by different barriers including financial constraints and climate change that mainly affects preparedness efforts. Different local institutions implement initiatives to strengthen the existing flood preparedness measures and resources and reduces barriers to effective flood preparedness. Chitsungu community had inadequate preparedness measures and resources, mainly on infrastructure, education and training, building codes, emergency shelters and awareness. It is also affected by a number of barriers including financial constraints, climate change, poor infrastructure and lack of community cooperation with hinders the implementation of preparedness efforts. Local institutions, play a pivotal role including resource allocation,

facilitating development and supporting vulnerable groups but their efforts are limited by lack of resources, thereby affecting the implementation of flood preparedness initiatives. Therefore, by having inadequate flood preparedness measures and resources, barriers and limited capacity of local institutions, the level of flood preparedness of the community is markedly low, hence there is need of tailored interventions for capacity-building, enhancing resilience and reduce flood impacts

#### 5.4 Discussion of the study findings

Research findings indicates that the community households are aware about the occurrence of flooding in the community. Chitsungo community is located within the arid region which is hot and prone to flooding. The community has existing flood preparedness measures and resources such as sand bags, communication strategies and storm drains, which play a pivotal role in reducing the impacts of flooding in the community. However, lack of national disaster policies that governs disasters risk reduction initiatives hinders the availability of resources and preparedness measures. The research indicates gaps in flood preparedness measures and resources in the community. Inadequate infrastructure, lack of resources and preparedness measures and lack of preparedness plans increases the susceptibility of the community to the impacts of flooding. Since the community mostly uses indigenous knowledge system, the community is failing to integrate scientific and indigenous knowledge system and this can increase the chances of false early warnings. The use SMS for issuing warning information highlights the significance of channels that are accessible. However, electricity challenges and poor network affect the effectiveness of these channels.

The community households lack adequate resources and flood preparedness measures such as community resilience, first aid kit and emergency shelter for a community to be prepared. Lack of resources was also identified by Mudavanhu (2014) as a major factor hindering disaster preparedness and increasing schools' vulnerability to flooding in Chitsungo Mbire District. The community is located near major river (Hunyani), and is characterized by clay soils and low vegetation cover which increases the vulnerability of the community to flooding.

The results indicated that the respondents only know how to prepare for floods but they are unaware about crucial resources such as emergency shelter, community resilience and flood preparedness plans hence, they are not fully prepared to respond to flooding. Amri et al., (2016),

results shows that many community members lack disaster risk reduction knowledge even though they have good sense of hazard awareness. Another scholar supports that disaster preparedness is a function of the level of awareness, worry and risk perception, (Muzenda-Mundavanhu et al., 2016). With low level of awareness, the community of Chitsungo have higher chance of continued low participation in flood preparedness activities. This will derail the achievement of seven global targets, and thus increased flood disaster impacts in the community, increased vulnerability and reduced community resilience. The community households had inadequate infrastructure such as functional drainage system and elevated home to reduce the impacts of flooding. If flooding strikes most of households would be affected due to resource gap. The Civil Protection Act which only made resources available when a disaster occurs might be a root cause of shortage of resources in Chitsungo community, therefore it should be amended to be more proactive as this can help in ensuring that the community get resources for flood preparedness.

The results demonstrate that the key informants are aware of the barriers that commonly affects the community to implement effective flood preparedness. Chitsungo community is one of the marginalized communities, it faces challenges in initiating preparedness efforts including financial constraints, poor infrastructure and lack of evacuation plan. Financial constrains is a major barrier affecting the community causing difficult for them to implement effective preparedness measures. The respondents also, shows that lack of community cooperation and no access to early warning systems have also direct impact to the community.

Local institutions have contributed to effective flood preparedness in the community with Local Government, Mbire Rural District Council and NGOs playing a pivotal role. They have commonly known for contributing to the implementation of initiatives that are meant to reduce the impacts of flooding. Due to barriers, the ability of community households to prepare for flooding is being affected, therefore collaboration with different institutions is necessary for capacity-building and enhancing resilience.

## **5.5 Recommendations**

- With the assistance of local institutions and DCP, local communities should develop preparedness measures by conducting regular drills and simulations, developing emergency plans, identifying flood prone areas and map evacuation routes so that everyone would be aware and prepared for flood hazard.

- Local institutions should allocate resources to enhance community resilience through set aside fund for infrastructure development, through training and education of community members and give support to community-based projects.
- Local institutions should be equipped to strengthen existing preparedness measures and resources by donors, government and international agencies by donating resources equipment.
- Barriers to effective preparedness should be addressed by engaging community members and allowing full participation so as to build sense of ownership, ensure inclusive and effective solutions.
- Local Government, stakeholders and experts should ensure community safety through conducting participatory hazard and vulnerability mapping and ensure that community members engage and participate in safety programs.
- Local institutions should offer training courses to traditional leaders, councilors and community members on flood preparedness.
- Local institutions should develop flood preparedness plans should, update them to changing situations and implement them in the community annually for improvement.

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## **Appendices**

### **Appendix 1: Questionnaire**

I am W Juankinyu a fourth-year student at Bindura University of Science Education studying a Bachelor of Science Degree in Disaster Management Sciences. I am carrying out a research entitled: An Assessment of level of flood Preparedness in Chitsungo community ward 10 Mbire District in Zimbabwe: A case of Mbire District. This questionnaire is meant to collect information about the knowledge of community members about flood preparedness in the community. However, disclosure of your personal identity is not necessary. Confidentiality and privacy regarding information you provide will be maintained. You shall voluntarily participate and you can withdraw your participation at any stage without prejudice. You are advised that there is no financial benefit for participating in this survey. the survey will take 20 minutes.

**Topic: To assess the level of flood preparedness**

#### **Instructions:**

- Use checkboxes (✓) for closed questions.
- Provide brief written answers for open-ended questions.
- All responses are anonymous.

#### **Section 1: Demographic Information**

##### **Objective 1: To assess the existing Flood Preparedness Measures and Resources**

5. Are you aware of any flood preparedness measures and resources in Chitsungo (e.g., early warning systems, sand bags, storm drains, awareness and communication strategies)?

☐ Yes

☐ No

If yes, which measures and resources do you know about?

.....

6. Do you have access to emergency resources (e.g., first-aid kits, sandbags, shelters) during floods?

☐ Yes

☐ No

☐ Unsure

7. Do you have early warning systems in your community?

☐ Yes

☐ No

7. If yes, name them and the channels used to disseminate the warning information.

.....  
.....

9. Do you have flood preparedness plan in your community?

.....

10. Do you have adequate elevated homes and functional drainage systems to reduce flood impacts?

.....

## **Objective 2: Barriers to Effective Flood Preparedness**

10. What are the main challenges affect your household in preparing for flooding? (Select all that apply)

☐ Financial constraints

☐ Climate change

☐ Low risk perception

☐ Poor infrastructure

☐ Other, Specify.....

11. Do you trust flood warnings provided to the community?

☐ Always

☐ Sometimes

☐ Rarely

☐ Never

12. Are cultural and social beliefs barrier to effective flood preparedness in your community?

☐ Yes

☐ No

13. What do you think stops people in Chitsungo from being better prepared for floods?

.....

14. What are the most challenges faced by community households to implement flood preparedness? (Rank them).

.....

### **Objective 3: Role of Local Institutions**

15. Are you aware of any local institutions (e.g., Rural District council, NGOs and CBO) working on flood preparedness?

☐ Yes

☐ No

16. How satisfied are you with the support provided by local institutions for flood preparedness in your community?

☐ Very satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Very dissatisfied

17. Do local institutions involve community members in flood preparedness activities?

☐ Yes

☐ No

☐ Unsure

18. What specific roles have local institutions taken to help the community prepare for floods?

.....

19. How could local institutions improve their support for flood preparedness?

.....

### ***Closing Questions***

20. Is there any anything else you would like to share about food preparedness in Chitsungu?

.....

**Thank you for your participation**

## **Appendix 2: Interview Guide**

I am W Juankinyu a fourth-year student at Bindura University of Science Education studying a Bachelor of Science Degree in Disaster Management Sciences. I am carrying out a research entitled: An Assessment of level of flood Preparedness in Chitsungo community ward 10 Mbire District in Zimbabwe: A case of Mbire District. This interview guide is meant to collect information about the knowledge of community members about flood preparedness in the community. However, disclosure of your personal identity is not necessary. Confidentiality and privacy regarding information you provide will be maintained. You shall voluntarily participate and you can withdraw your participation at any stage without prejudice. You are advised that there is no financial benefit for participating in this survey. the survey will take 20 minutes.

### **Interview Guide for Assessing Flood Preparedness in Chitsungo Community**

#### **Objective 1: To assess existing flood preparedness measures and resources.**

- 1a) Can you describe flood preparedness measures that are currently implemented in Chitsungo?
- b) What specific actions are taken before, during, and after floods?
- 2a) What resources (e.g., first aid kit, emergency shelters, sand bags) are accessible for flood preparedness?
- b) Are these resources sufficient for the whole community?
- 3a) What channels used to disseminate flood warning information and how effective are these systems?
- b) Are warnings timely, accurate, and understood by all?
- 4a) Are there adequate elevated homes and functional storm drainage system in your community?
- b) Do you have flood preparedness plan in your community?
- 5. How preparedness measures (e.g., drainage systems, elevated homes) maintained?

#### **Objective 2: To identify barriers to effective flood preparedness.**

1. What do you consider as the biggest challenges to effective flood preparedness in your community?
2. Are there critical resources (funding, infrastructure) that are lacking?
3. How do communication (e.g., language) affect preparedness efforts?
- 4a) What factors discourage community participation in preparedness activities?
  - b) Do cultural and social beliefs affect preparedness?
5. How do funding limitations impact preparedness efforts and resource allocation?
6. What unsolved problems from past floods continue to affect preparedness?

**Objective 3: To assess the contribution of local institutions in effective flood preparedness.**

1. What local institutions operate in your community?
2. What roles do local institutions play in enhancing flood preparedness in the community?
2. How do these institutions collaborate with each other and external agencies during preparedness efforts?
3. Do local institutions provide adequate financial, material or technical support for flood preparedness?
  - 4a) How much do residents trust local institutions to lead during floods?
    - b) What shaped this perception?

**Closing:** Is there anything you would like to share about flood preparedness in Chitsungu?

## **Appendix 3: Observation Guide**

### **Section 1: Existing Flood Preparedness Measures and Resources**

- ☐ Presence of flood barriers (e.g sand bags, storm drains): Yes/No
- ☐ Number of emergency shelter identified: \_\_\_\_\_
- ☐ Evacuation route signage visible: Yes/No
- ☐ First aid kits: Yes/No
- ☐ Early Warning systems (e.g., indigenous knowledge system, TV, SMS, Radio): Yes/No

### **Section 2: Barriers to Effective Flood Preparedness**

- ☐ Blockage drainage systems: Yes/No
- ☐ Poor Infrastructure: Yes/No
- ☐ Visible engagement in preparedness activities (e.g., drills, training): Yes/No
- ☐ Evidence of scarce resources: Yes/No

### **Section 3: Role of Local Institutions**

- ☐ Presence of local disaster management office: Yes/No
- ☐ Visible institutional materials (e.g poster, emergency contact lists): Yes/No
- ☐ Number of collaborative projects visible (e.g., NGOs partnerships): \_\_\_\_\_
- ☐ Evidence of recent training/ workshops: Yes/No

## **Appendix 5: 5-licket scale**

Iam W Juankinyu a fourth-year student at Bindura University of Science Education studying a Bachelor of Science Degree in Disaster Management Sciences. I am carrying out a research entitled: An Assessment of level of flood Preparedness in Chitsungo community ward 10 Mbire District in Zimbabwe: A case of Mbire District. This 5-licket scale is meant to collect information about the existing flood preparedness measures and resources in the community. However, disclosure of your personal identity is not necessary. Confidentiality and privacy regarding information you provide will be maintained. You shall voluntarily participate and you can withdraw your participation at any stage without prejudice. You are advised that there is no financial benefit for participating in this survey. the survey will take 20 minutes.

### **Elevated homes**

1. ☐ Not elevated at all (No protection against flooding)
2. ☐ Minimal elevation (Limited protection)
3. ☐ Moderate elevation (Some protection)
4. ☐ Adequate elevation (Effective protection)
5. ☐ Optimal elevation (Reliable protection against severe flood events)

### **Drainage Systems**

1. ☐ Completely inadequate (Unable to handle minor flood events)
2. ☐ Limited capacity (Highly vulnerable to flooding)
3. ☐ Moderate capacity (Some flood management capability)
4. ☐ Well-designed (Effective flood management)
5. ☐ Highly efficient (Can handle severe flood events)

### **Community Flood preparedness measures and resources**

1. ☐ No measures/ resources (Vulnerable)
2. ☐ some measures/ resources (At risk)
3. ☐ Moderate measures/ resources (Prepared)
4. ☐ Substantial measures/resources (Resilient)
5. ☐ Comprehensive measures/resources (Thriving)



DISASTER RISK REDUCTION DEPARTMENT

BINDURA, Zimbabwe  
Mobile No: +263 773 487 211  
WhatsApp: +263 773 487 211  
E-mail: emavhura@buse.ac.zw

BINDURA UNIVERSITY OF SCIENCE EDUCATION

CHAIRPERSON'S OFFICE

21 April 2025

To Whom It May Concern

Dear Sir/ Madam,

REF: SPECIAL REQUEST FOR WORSHIP WILFRED JUANKINYU (B213598B) TO  
BE GRANTED SPECIAL PERMISSION TO ACCESS YOUR INSTITUTION'S DATA  
FOR EDUCATIONAL PURPOSES

This is to confirm that WORSHIP WILFRED JUANKINYU, Registration Number B213598B, is a student pursuing a Bachelor of Science Honours Degree in Disaster Management Sciences (HBSc.DMSc) in the Disaster Risk Reduction Department at Bindura University of Science Education. As part of his degree program, he is required to complete a research project, for which he will gather data from various sources, including your institution.

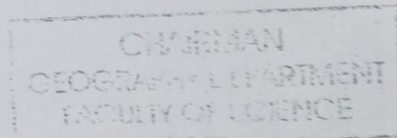
We kindly request your assistance in providing any information he may need from your organization.

For any further information or clarification, please feel free to contact the undersigned.

Yours faithfully

H. Musarandega (Dr.)

Acting Chairperson, Disaster Risk Reduction Department



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