

**COPYING STRATEGIES TO CHRONIC FLOODS IN KUKU RESIDENTIAL AREA IN  
LUSAKA DISTRICT, ZAMBIA: A HERMENEUTIC PHENOMENOLOGY STUDY**

**BY**

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requirements for the award of Master of Science in Geography**

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I, Catherine Whitniss Bulambo (2018248669), declare that this dissertation represents my own work. It has not previously been submitted for a degree or any award at the University of Zambia or any other institution. All published work or materials from other sources incorporated in this dissertation have been specifically acknowledged and references thereby given.

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## **CERTIFICATE OF APPROVAL**

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## **DISCLAIMER**

All the pictures used in this dissertation are with permission from participants in Kuku residential area in Lusaka District of Lusaka Province in Zambia.

## **ABSTRACT**

Chronic flooding is one major annual disaster, whose effects have not been sparing the residents in Kuku, a low cost residential area in the urban District of Lusaka. It has been attributed by both natural and manmade factors such as the inability of the residential area to drain water, change of rainfall pattern, increase of built environment without sustainable drainages and poor garbage disposal with emphasis on the non-biodegradable materials. Incidentally, this study entails the captured raw lived experiences of chronic flood victims of the Kuku residential area of Lusaka district from a hermeneutic phenomenology approach study. It was entirely anchored from a qualitative methodology. Descriptive, Hermeneutic phenomenology and explorative research designs, snowball sampling method, unstructured interview guide, observation and a camera were used to generate data from the participants. With the use of a thematic analysis, the study exposed the effects of the flooding which are; victims are sometimes left homeless, affected with waterborne diseases, loss or disruption of welfare, loss of diversity of livelihoods and trauma. It also considered a magnitude of lived experiences from flood victims with three or more annual episodes of floods. The captured experiences and challenges among flood victims included; sleepless nights and fear to relocate, social conflicts, fear of junkies and negative effects of flooded potholes and dug trenches. Despite the severe effects of urban flooding, most resilient flood victims in Kuku have continued to inhabit the area due to the opportunities and limited options available to them and their socioeconomic status. The study reported that flood victims had over time developed coping strategies which help to adapt to conditions of the residential area. These include; the use of sandbags and pouring of sand to elevate the low lying Earth surface areas, dig trenches, build houses and toilets with a high elevation to prevent flood water from flowing through them. Some victims are left traumatized during and after the flooding. To this effect, most flood victims were against permanent relocation. The failure to refurbish dilapidated houses and lack of a reliable source of sustainable financial support system to help them relocate and live in non-prone area expedites the challenges experienced with flooding. Findings indicate that, overall, the raw lived experiences of the chronic flood victims are a reflection of their resilience, vulnerability of the urban low cost residential area to flooding, the capability of their socioeconomic status to sustain themselves and poor planning of the built environment. The study also recommends that the victims and all kuku residents should holistically implement the following eco-friendly

sustainable measures in order to reduce the effects of flooding; personal hygiene, construction of a recycling centre for non biodegradable domestic garbage within Kuku residential area, mobile dumpster, construction of an organic manure centre, environmental education to be embraced by the residents, inclusive area improvement and sensitization programs to be put in motion, provision of garbage collection services by the local authority, engaging proper engineers, increasing drainage systems and advocating and implementing the construction of flushable toilets with septic tanks.

To the Almighty God, my Family and the resilient chronic flood victims.

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“This can only be *“Uchala”*.”

“This can only be the Almighty God”.

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## ABBREVIATIONS AND ACRONYMS

<b>CBD:</b>	Central Business District.
<b>CFR:</b>	Case Fatality Rate
<b>CSO:</b>	Central Statistics Office
<b>DMMU:</b>	Disaster Management and Mitigation Unit
<b>EDHEC:</b>	<i>Ecole Des Hautes Etudes Commerciales du Nord</i>
<b>FCAC:</b>	Fragile and Conflict-Affected Contexts
<b>FRACTAL:</b>	Future Resilience for African CiTies and Lands
<b>IPCC:</b>	Intergovernmental Panel on Climate Change
<b>ITCZ:</b>	Intertropical Convergence Zone
<b>JICA:</b>	Japan International Cooperation Agency
<b>LCC:</b>	Local City Council
<b>OCHA:</b>	Office for the Coordination of Humanitarian Affairs
<b>PTSD:</b>	Post-Traumatic Stress Disorder
<b>UNZA:</b>	University of Zambia
<b>ZamStats:</b>	Zambia Statistics Agency
<b>ZNBC:</b>	Zambia National Broadcasting Corporation

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Introduction**

This chapter outlines six sections. These include the background to the study, problem statement, aim, research objectives, research questions and rationale of the study.

### **1.2 Background to the study**

Risks and disasters associated with water have increased globally and they affect a broader geographical region than other disasters (Mubanga, 2012; Umar and Gray, 2022). Such risks and disasters materialize themselves in some places as floods (Qari1, 2014). Floods serve as one of the undesirable disasters that people endure on earth (Hamza *et al.*, 2019). It is undesirable because there is discomfort and inconveniences that come with flooding on the flood victims' wellbeing.

According to Flood Proof (2022:1) "Flooding is an event where water rises higher than normal levels and cause damage to land, structures and infrastructure". Henceforth a threat which informs people to consider working on the poor drainage system and failure will result into floods. Floods occur both in rural and urban areas. A flood in the context of this study is a living proof to the clash between urban development and weather-related vulnerabilities (Munsaka and Mutesa, 2020). The consequences are directly proportional to the loss of natural vegetation which results in unbalance and distortion of the ecological cycle, if it is excessively done by man. A flood is also a risk thus something that is harmful to people (Shi, 2019), therefore flood victims may end up being infected with water borne diseases or left homeless. A flood is also categorized as a disaster thus an experience that takes place when a sizable number of people are exposed to an extreme event to which they are vulnerable. This causes harm, fatalities, property destruction and loss of their livelihoods (Li, Stringer and Dallimer, 2022; United Nations International Strategy for Disaster Reduction, 2009). Flood Proof (2022:1) further claims that "anywhere it rains, it can flood". Flooding is a tangible climatic risk. It implies that there is a direct, adverse effect of climate change on corporations (*Ecole Des Hautes Etudes Commerciales du Nord*, 2022). Infrastructure, people, businesses and buildings are all part of the corporations. Physical dangers or risks "involve risks from climate change including risk to facilities and infrastructure, impact on operations, water

and raw material availability and supply chain disruptions” (Reisingner, *et al.*, 2021:13). A risk is however, a potential disaster brought on by a vulnerability in a particular area (Shi, 2019). A flood prone area of this study is particularly a populated and low cost residential area located in an urban area.

It is critical to recognize that floods are caused by different factors. Flooding may occur as a result of natural or manmade causes: According to Sugianto *et al.*, (2022) floods are phenomena caused by natural events and human activities. From a natural disaster point of view: this is where it has nothing to do with man being the centre of the cause but an abnormal natural increase of water on the Earth’s surface in low and high lying earth surfaces due to high precipitation mainly and precisely through the change in rainfall pattern. The causes include torrential rainstorms that occur frequently, as well as areas’ limited or complete incapacity to drain rainwater (Umar and Gray, 2022). Manmade flood causes occur due to human activities such as an increase of grey infrastructure on the earth’s surface without drainages. Ajjur and Al-Ghamdi (2022) and Xiang *et al.*, (2013) emphasizes that an additional cause of floods is an increase in population. As a result of population growth and urbanization, there are more impermeable surfaces which makes it harder for water to seep into the soil. Subsequently, the amount of water runoff on the surface rises. This is because more natural vegetation has been replaced as a direct result of population growth. The replacement consists of the built environment and concrete, which aggravate the reduction of infiltration and raise the likelihood of floods. Narrowing it to the social underlining causes, Stebbing and Tischner (2015) asserts that poverty and rising population density both contribute to a greater vulnerability to climate-related calamities. In most cases, low-income individuals are vulnerable to such calamities as they typically may only afford to reside in unpleasant areas, the cheapest outlying areas and wastelands such flood plains where the danger of disasters is significantly higher. Nchito (2007) confirms that such circumstances exacerbate flooding in urban areas. Incidentally, Singh (2022) reveals that urban flooding is the accumulation of floodwater that results when the inflow of rainwater exceeds the capacity of drainage system to infiltrate water into the soil or carry it away. This is mainly due to poor urban water management systems which depend on traditional engineering approaches. These evacuate the runoff from the city instead of storing it for reuse. In another study by Mensah and Ahadzie (2020:7) contends that “urban areas, roads, pavements, and compacted soil areas have increased impermeable surfaces,

thereby increasing surface water runoff. This has also led to the increase in discharge that overloads drainage channels poor planning has been noted as a major cause of the increasing urban flooding in Africa”. The adverse impacts of floods in urban areas have severely affected the poor (United Nations Economic and Social Commission for Asia and the Pacific, 2009). The exceedingly severe damage in recent decades has provided evidence of the impacts caused by flooding (Mubanga, 2012; Umar and Gray, 2022). For instance, according to Bailey (2021:3) “Flooding is a social justice issue, disproportionately affecting those at the lowest rungs of the socioeconomic ladder”. The lowest rungs consist primarily of marginalized populations. In support, Bailey (2022) and the Ministry of Planning Development and Special Initiatives (2022) contends that floods in Pakistan have disproportionately affected the poorest households in the poorest places. The severely damaged regions are those whose human development outcomes were already the lowest before the floods. Those who often have lower salaries and less financial security are frequently more exposed and vulnerable to flooding. This is a common trend in developing nations where some populations are marginalized. The population is classified according to their poor socioeconomic level, identities associated with certain social classes or groups and factors such as gender, race, age, handicap and low socioeconomic status. For instance, women in impoverished nations are more susceptible to the effects of the climate than men living in the same home. This is as a result of social norms including less developed social networks for women and slower human capital creation. Consequently, women are less informed of the risks and available responses (Woetzel, 2020).

In light of the experiences that results from flooding, Bailey (2021) claims that Pathogens are both harbored and spread by the floodwaters. If drinking water facilities are contaminated, it helps spread waterborne illnesses like cholera, leptospirosis, hepatitis A and typhoid. Mzyece and Muchanga (2023) affirms that floods upend lives, destroying homes, assets and livelihoods in communities. Additionally, (Bailey, 2021: Rosmadi *et al.*, 2023) contends that flooding has a serious negative impact on mental health. This is in the aftermath of floods, it worsens depression, substance abuse and Post-Traumatic Stress Disorder (PTSD).

Floods are a common problem in African nations. Storms are more frequent and intense in flood prone areas of Africa, which causes improperly built structures to sustain damage (Olatunji, 2018).

Due to their lower ability to adapt, the world's poorest nations are the most susceptible to flooding. Sub-Saharan Africa is home to many of these fragile nations, where more than half of the population constitutes 55 percent lives in conditions of extreme poverty and significant flood risk (Bailey, 2021). According to Food Agriculture and Organization (2020) and Reed (2022) flooding has had contributed to food insecurity in 35 developing countries during the year 2020 in Southern Africa. Intergovernmental Panel on Climate Change (2007) argues that the Southern Africa region is predominately semi-arid with considerable rainfall variability and frequent flash floods. This is due to its low levels of adaptive ability making it the most vulnerable places to climate change.

The World Bank (2007) claims that Zambia faces climate risk, notably floods. Zambia experiences floods due to heavy rains. Many individuals are displaced by the flood, which also raises the possibility of the spread of waterborne infections (Satellite Office of the United Nations, 2020). According to Mwape (2009), household flood victims in Zambia's Sikaunzwe community of Kazungula District has been experiencing infections due to flooding. The illnesses experienced include malaria, fever, diarrhea, coughing, scabies, sores and rushes. Mwape (2009) further argues that the impoverished communities in Zambia have a similar pattern of disease outbreak over the past years. However, it serves as a reminder for the nation like Zambia to develop ability to preserve rain water in a safe and beneficial manner because the additional damage places a financial burden on the government (Jesuit Centre for Theological Reflection, 2020:1). Nchito *et al.*, (2018:1) points out that the peri-urban areas accommodate most of Lusaka's population. These areas consist of unplanned settlements which are now informal settlements and were once housing the laborers of adjacent farms or businesses. In a similar context, Tannerfeldt and Ljung (2006) assert that the growing urban population increases housing demand. While there is a demand for housing and related facilities, the supply of housing becomes insufficient, even for the mass poor who dwell in towns and cities. Hence residents are building houses even in flood areas and at the same time an increase of built environment without proper drainages expedites the risk of flooding in such areas.

Flooding in Lusaka city is a chronic annual event. The “floods have been part of the city since it evolved in the early 1900s” (Nchito, 2007:1). The residential area of Kuku has succumbed to the chronic floods. It has a population that is primarily made up of people with low incomes. Most

residents in informal settlements are a vulnerable group who rely on informal work to support themselves. The residents are susceptible to the negative effects of floods on their informal businesses and livelihoods (Mensah and Ahadzie, 2020).

Residents of Kuku's residential area experience floods differently depending on their backgrounds. These are beliefs and worldviews, sense of place, identities, cultures, and values associated with the residential area and victims, landscapes and power all have an impact on the experiences of the chronic flood victims in Kuku residential area (Crane *et al.*, 2013). Therefore, the importance of capturing flood victims' experiences cannot be overstated because it highlights the goals of an academic study. Therefore, area of this study is anchored from a low cost residential area located in an urban area which has had times without numbers succumbed to the chronic floods. Incidentally, it captured the actual raw lived experiences of recurrent flood victims in the Kuku residential area of Lusaka district.

### **1.3 Problem Statement**

The residents of the Kuku residential area are left homeless by the recurring annual floods. During floods, homes and properties are frequently flooded, forcing local populations to leave (Zambia National Broadcasting Corporation, 2011; Ali and Sulaiman, 2006; Nchito *et al.*, 2018; The Times of Zambia, 2022). The flooding that occurred from the 20<sup>th</sup> and 21<sup>st</sup> of January 2017 rainy season, had left unfavorable impacts on the infrastructure. The roads become impassable, buildings and homes were flooded in the residential area (Nchito *et al.*, 2018).

As part of the government's flood management plan, the majority of residents in flood-prone areas are often moved at little or no cost. Zambia Daily Mail (2018) claims that, the new settlements in most cases is not appropriate for the livelihoods of the displaced residents because they are not familiarized with the area. The relocation of the flood victims results in the loss of their livelihoods. These include minor trading and businesses carried out by Kuku residents, such as selling perishable products, nonperishable commodities, saloons and barbershops.

Floods have facilitated the spread of chronic diseases such as malaria and cholera, which are waterborne illnesses in Kuku residential area. The breeding ponds created and left behind by illegal quarrying, worsens this condition (Siachoono, 2013). Flooding poses a health risk because flood

water combined with exposed human waste from flooded pit latrines contaminates domestic water in shallow wells. Ministry of Local Government and Housing (2017) indicated that there were about 10 percent and 90 percent of residents using flushable toilets and pit latrines respectively in Kuku residential area. These pit latrines also emit a foul odor, especially during the rainy season when they overflow. This negatively impacts on the residential area's environment and residents with land and air pollution (Yassin, 2017). According to Yomwan *et al.*, (2015), floods convey and spread germs, parasites and harmful particles that contaminate sources of clean drinking water, causing diarrheal illness outbreaks. In this way, disease outbreaks are inevitable as a result flooding pose a serious threat to Kuku residents. The purpose of this hermeneutical phenomenological study was to understand and draw lessons from the lived experiences of chronic flood victims in Kuku residential area.

#### **1.4 Aim**

To capture the lived experiences of the chronic flood victims of Kuku residential area and to draw lessons in order to improve their wellbeing.

#### **1.5 Research objectives**

- i. To investigate the effects of chronic floods experienced by the flood victims of Kuku residential area.
- ii. To find out the challenges experienced by chronic flood victims in Kuku residential area.
- iii. To find out the opportunities experienced by chronic flood victims in Kuku residential area.
- iv. To explore possible sustainable coping strategies used by the flood victims to adapt to the effects of chronic floods in kuku residential area.

#### **1.6 Research Questions**

1. What effects of chronic floods are experienced by the residents in Kuku residential area?
2. What challenges have you been experiencing due to chronic flood in Kuku residential area?
3. What opportunities have you been experiencing from the chronic flood in Kuku residential area?

4. What sustainable coping strategies have you been using to adapt to the chronic floods in Kuku residential area?

### **1.7 Rationale**

Given that this research study exposed the lived experiences of chronic flood victims in Kuku residential area and their coping strategies. This study may be useful to policymakers, spatial planners, the Disaster Management and Mitigation Unit, and non-governmental organizations. It has explored and documented the lived experiences of chronic flood victims in Kuku residential area. According to Rateau (2011), examining the accounts of persons who have experienced catastrophic loss due to flooding allows for a better understanding of the survivor's priorities and may aid in the healing process. As a result, this study may give policy makers and spatial planners a greater understanding of the struggles, potential needs and experiences faced by flood victims. When developing disaster response plans and tactics, such knowledge is essential. Haer *et al.*, (2016) argues that a bottom-up (people-centered) method controlled by policymakers can be significantly be more beneficial than a top-down approach to flood risk research through effective communication. This makes the study on people's views and actual experiences holistically useful for developing and implementing policies.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1. Introduction**

This chapter unfolds two theoretical framework used in understanding the lived experiences of chronic flood victims in Kuku residential area of Lusaka district, literature review on; floods in Africa, floods in Zambia, Floods in Kanyama and George residential areas, the marginalization of the Kuku residential area, the close-by causes of recurrent flooding in Kuku residential area, the solutions adopted, case studies of flooding from other countries and the literature gap.

### **2.2 Theoretical Framework**

Simatele (2010:35) says that “Although no specific legal and policy framework exists for climate change adaptation in Lusaka, a number of existing government institutions and agencies have some mandates that have both explicit and implicit influence on issues pertaining to climate change”, Siame (2021:116) further supports and contends that “Reducing the climate risks facing cities is now firmly on the international policy agenda”. As a result, the study rode on the path of an etic researcher. The following theoretical frameworks were adopted as the foundation that fueled the understanding of this study. These are Symbolic Interaction Theory and the Four Lifeworld Existentials which serves as the study's theoretical framework and skeleton.

#### **2.2.1 Symbolic interaction theory**

The theoretical frameworks used in the study to examine and comprehend the lived experiences of the Kuku flood victims in Lusaka were the symbolic interaction theory and the four lifeworld existential by Manen. The following segment convey the insights of the symbolic interaction and four lifeworld existential.

According to the symbolic interactions idea, persons exist in both a natural and symbolic environment. Through the use of mental symbols, symbolic contact is a process that brings mutual meaning and values to life. Symbolic interaction focuses on the issue of which symbols and meanings emerge from the interaction between people and explores the meanings from the reciprocal interactions of persons in social situations (Slatter, 2007). The source of data, according to all interactionists, is human interaction. The key subjects of symbolic interaction, according to

the majority of symbolic interactionists, are participants' viewpoints and their capacity to build understanding (Aksan, 2009).

Kabwe *et al.*, (2021) asserts that the social theoretical approach of George Herbert Mead (1863–1931) and Max Weber is known as symbolic interactionism (1864-1920). George Herbert Mead is the most significant symbolic school theorist. He thought that the ego and the mind are byproducts of society. He also believed that the mind develops through the use of symbols, which are also a form of thinking and communication. The phrase "symbolic interaction" was first used by Blumer, a Mead student. Hence, he is credited as the creator of symbolic interaction. Blumer argued that rather than regarding the individual and society as completely distinct entities, all studies of human behavior must start by examining how people engage with and interact with one another. According to Blumer, there are three fundamental assumptions underlying the symbolic interaction: Humans form attitudes about things based on the meanings that those things have for them. These meanings are inferred from how one of them engages with its addressees and they change as the interpretation is carried out (Aksan, 2009). By adopting Blumer's reasoning, the researcher was greatly helped in better comprehending the factors that form their own lives, as well as how those forces shape the lives of people around them and the society in which they live (Adade, 2018). In understanding how people perceive the things they see and experienced helped the researcher better capture and understand how flood victims respond to flooding through their coping strategies experiences based on how they practically thrive in flooding residential areas. Aksan (2009) makes the point that understanding human definitions, meanings and processes is a prerequisite for understanding human behaviors. Their Social roles, traditional structures and legislation serve as a tool and definition to embrace life and face it head on into oblivion to building their lived experiences.

The urban residential area in this study was an unplanned for a human settlement, therefore some residents from the area pay less attention in the management of the area. There is also negligence to the residential area as it is currently an informal residential area and an 'improved area' as compared to those in planned residential areas. This has contributed to them living an undesirable lifestyle as some see themselves hopeless. For example; some residents throw garbage anywhere, some are into prostitution, some invest in alcohol drinking from morning to sunset while simultaneously constituting some residents who uphold moral life values however, their concern

is that their children will adopt the negative vices from other residents. This theoretical framework paved a way to understand why the area has been experiencing chronic floods and how the residents are playing a role as a contributing factor. With reference to the interpretation of the symbolic interaction theoretical framework, residents' form and respond to things based on the meanings that those things have for them in the environment they live in. A practical scenario in kuku residential area is that of the way in which garbage is discarded. Some residents throw garbage on the premises of their neighbors' because of the state they are in, "the neighbors' premise look like a garbage site" due to negligence of flood management by the residents. Flood management is "living with flooding, minimizing its losses and even deriving benefits from it where possible" (Wang *et al.*, 2022:2). In addition, some structures that were built out of substandard material. As a result, some of the passerby and surrounding residents have interpreted and identified them as areas of garbage site which has contributed to clogging of the small drainages. Therefore, it's important to note that the flood victims in the same way have been reciprocating to the chronic flooding as a phenomenon that they have to live with and embrace it.

### **2.2.2 The Four Lifeworld Existential**

This study adopted the four lifeworld existentials or lifeworld themes; lived body, lived time, lived space and lived human interactions to provide a framework for understanding the world of lived experience (Simui, 2018; Rich, 2013; Van Manen, 1997). The lifeworld or existential issues encompass both the objective and fundamental elements of the hermeneutic circle. This framework also supports the researcher's subjective participation in the study process as well as the researcher's experience of a phenomena in a chain of similar experiences. The lifeworld as a term is essentially the world of chronic flood victims' experiences from Kuku residential area in this academic research study. It is the regular reality that we interact with and experience on a daily basis, unconsciously and without reflection. As a result, our lifeworld and world of lived experience are what we encounter before we begin to conceptualize it (Rich, 2013). These parameters provide comprehensive and insightful information into how the flood victims in the Kuku residential area experience life. Knowledge emanating from those lived experiences of the flood victims living is vital to support their present needs and to plan for future cohorts (Rhyn, 2019). The figure 2.1 illustrates the four essential elements to holistically conceptualize the lived

experiences. Rhyn (2019) further claims that although the four lifeworld existentials offer distinct areas of emphasis, they are not clearly distinct from one another; rather, they are interconnected and engage in interaction with one another as the lifeworld is explored. As Van Manen (1997) also put it as that which many experiences can be understood as corresponding to these four lifeworld existentials; as such it is a useful framework for investigating an understudied phenomenon.

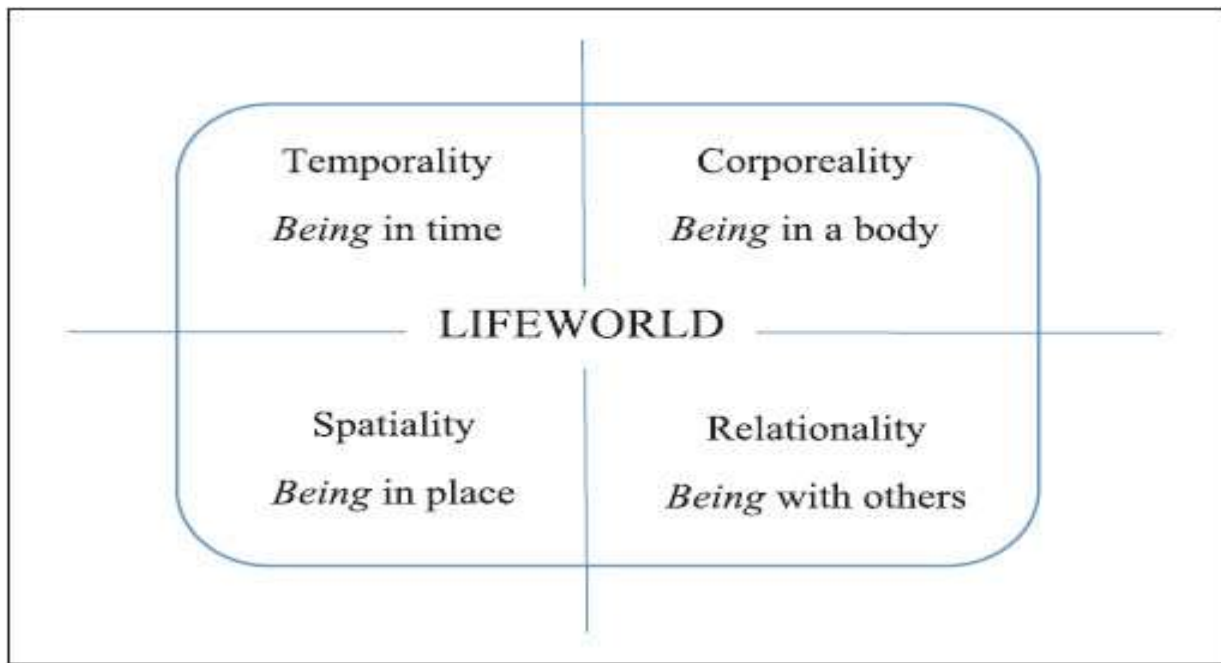


Figure 2.1: Reflective lifeworld existentials framework

Source: Rhyn (2019:4)

As shown in Figure 2.1 are the four reflective lifeworld existential and the centre is the lifeworld, according to Simui (2018) the lived body or being in a body (corporeality) is the term used to describe the physical bodies or bodily presence in our daily lives, as well as everything they experience, express, hide, and communicate through our lived bodies. Since human bodies are always physically present, we can only speak, feel, interact and engage with the environment through them. Time is experienced by us as the existential of lived time. This relates to the period of flood victim's experience or how long an individual has experienced or been subjected to specific phenomena thus in this study period of time (3 times) or more experience of the floods in the same area and is made up of a subjective sense of time as opposed to the more objective or "factual" time. Time's restrictions, liberties and demands can all have an impact on how flood victims feel and vice versa.

The way flood victims feel can also be influenced by how and what they experience over time and moments. The existential, inhabited space of the third lifeworld is what is referred to as lived space thus individuals' perception of the places they find ourselves. Lived space or being in place (spatiality explores both the way in which the space they find ourselves affects the way they feel and equally, how the way they feel can affect the way they experience a particular space. The existential lived human relations or and being with others (relationality) are the connections they establish or keep up with people in their lifeworld. Their connections and communication with others through the spaces and exchanges they share and create with them comprise our human relations (Van Manen, 1997).

Although the four lifeworld existentials offer distinct areas of emphasis, they are not clearly distinct from one another; rather, they are interconnected and engage in interactions with one another as the lifeworld is being explored. According to Van Manen (1997), many experiences can be viewed as correlating to these four lifeworld existentials; as such, it served as a useful framework for exploring an understudying research study. In this study, the phenomenon being investigated were the experiences of the flood victims and their repeated episodes of flood events.

### **2.2.3 Application of the Four Lifeworld Existentials to the lived experiences of chronic flood victims in Kuku**

#### **2.2.3.1 Lived body (corporeality).**

The interview transcripts were read, reread through and coded one at a time while listening to its audio in order to examine the participant's lived experiences as chronic flood victims. This section focused on the chronic flood victim's expression of their feelings and descriptions of their bodies during the floods. For example; Participant 1 and 11 have recounted their body's feelings when experiencing flooding in the residential area in chapter 5 under sub section 5.3.1.6.

#### **2.2.3.2 Lived time (temporality)**

Following the examination of the lived body, all interview transcripts were reviewed, coded and categorized according to the existential of lived time. By using this strategy, the researcher was

able to ascertain the chronic flood victims' experienced time in their lives. The residents of Kuku talked about their future as recurring flood victims and the thought of leaving the area scared them since if nothing is done to mitigate the floods, the area's population will continue to increase and putting up more physical structures will create further floods. The experiences of the chronic flood victims have shown to be significantly influenced by time spent in the area. For example; the longer they stay in kuku residential flood area, the more knowledge of lived flooding experiences they have. This has been recounted by participant 3 and 4 in chapter 5 under sub section 5.3.4. To this effect, this research study, the researcher considered chronic flood victims who had experienced the chronic floods for more than three times as that was enough lived experience for the victims narrate their real life experiences and how they have blended with their coping strategies to adapt to the chronic floods. Hence the above three participants 2,3 and 4 made mention of the periods they had experienced the floods in Kuku residential area thus 3,5 and 6 times of the annual flooding in the residential area.

#### **2.2.3.3 Lived space (spatiality)**

All of the transcripts were examined and investigated in accordance with the lifeworld of lived space as part of the third step of operationalizing the lifeworld existential. The lived space during this phase is depicted in figures 5.7 to 5.61.

#### **2.2.3.4 Lived human relations (relationality)**

In the final phase of the lifeworld existential exploration of the data, the transcripts were read through and reread. The interpersonal interactions of the flood victims who chose to speak about it, as well as how they described, perceived and felt about their encounters with other flood victims, had to be identified and looked into was considered. The 16 participants in this study had a common experience which was chronic flooding and are still victims to flooding. Due to their shared experience of flooding, the residents have close and similar relations. Their relations are symbolically reflected in the similarity of built houses to prevent flooding as shown in figures (5.32) and (5.34).

Therefore, two theory frameworks were utilized for this study's examination of the actual experiences of Kuku chronic flood victims in Lusaka. They have been utilized in order to explore, describe and understand how the chronic floods victims related their life experiences in Kuku residential area of Lusaka district, Zambia.

## **2.4 Floods in Africa**

Long before the year 2022, a rise in chronic flood cases was anticipated. The evidence from the past different studies such as; Mendel (2006) noted that the Luis Cabral slum inhabitants in the Maputo, Mozambique neighborhood claimed that floods had gotten worse since 1980. According to Patel and Burke (2009), the majority of families predicted that flooding risks would rise in the future and have a significant impact on their health. Flooding has a high risk of having a harmful influence on one's health (Okaka and Odhiambo, 2019). Despite this, many flood victims stay around in their homes because they have nowhere else to go. Members of households are negatively affected by flooding in terms of their physical and emotional wellbeing. Even yet, most households adopt some form of adaptation, most of which are temporary. Financial limitations, a lack of understanding, and government assistance are the main causes. The adoption of long-term adaptation strategies at the home level has been strongly influenced by gender and perceptions of flood risk. Additionally, there is a direct correlation between inadequate urban design in developing nations and the frequency of risks like flooding that burden the lives of individuals who are already in vulnerable circumstances (Patel and Burke, 2009). According to Okaka and Odhiambo (2019), the rising frequency of floods in African cities is primarily attributable to inadequate planning and a large concentration of people and buildings.

Studies on chronic flooding have been conducted in several African nations and their findings show that: Kenya had inadequate urban planning, which encouraged the growth of informal settlements in flood-prone areas. It has contributed to flooding in these locations which has worsened at the same time (Okaka, 2014). According to Musoke (2011), inhabitants' inadequate rubbish disposal, unplanned building development and limited drainage are to blame for the regular flooding in the Bwaise Parish III informal settlement region of Kampala, Uganda. According to Salami *et al.*, (2017), the majority of locals in Ibadan, Nigeria, believe that blocked natural and man-made streams and poor design are the main causes of floods. Whereas Mensah

and Ahadzie,2020 reveals that Ghana is not oblivion to the flood experiences in that about affected 55 communities and displaced 700,000 people due to floods. Inaddition, about 3,234 houses were destroyed while 23,588 acres of farmlands were submerged in the November 2010. People primarily attributed town floods to unplanned informal settlements. According to Patel and Burke (2009), persons who live in Mombasa City's flood-prone informal settlements are unable to migrate elsewhere despite not being oblivion of their vulnerability to negative health effects, which would be more severe for those who reside in underdeveloped areas.

## **2.5 Floods in Zambia**

In Zambia, there are several climate risks. These include persistent flooding, drought, deforestation and diarrheal illnesses. Chronic flooding disaster reduces development opportunities and is one of Zambia's main identified climate risks that causes population displacement (DMMU, 2005). Chronic flooding has affected the most people as a disaster, but the epidemics it has caused, like cholera, have killed the most people. According to Brunkard (2018), severe flooding and widespread water shortages caused cholera to reemerge in mid-March 2018. The outbreak had affected seven out of Zambia's ten provinces, with 5,905 suspected cases and a case fatality rate (CFR) of 1.9 percent and 5,414 (91.7 percent) of the suspected cases included residents of Lusaka, with 98 fatalities (CFR = 1.8 percent).

The change of rainfall patterns in Zambia is one of the factors which contribute to flooding. The majority of Lusaka experiences high rains during the rainy season, which causes an excess of precipitation and increases surface runoff. The groundwater table rises as a result of the rain thereby increasing the risk of flooding in low-lying areas (Nchito, 2007). This is the situation in the Kuku residential area, where residents regularly endure flooding because there is limited outlet of water drainage. Siame (2020) asserts that the failure to establish garbage separation from communities has contributed to flooding. This implies that recurrent flooding is partially as a result of human activity. The garbage is delivered directly to unauthorized dumps. In the long-term, this degrades the scenery of urban environments and increases the probability of flooding in the city.

Heavy rains during the 2022/2023 rainy season had led to flooding which created havoc on crops, electricity and telephone poles, roads, bridges and houses in Gwembe district, 380 kilometers south of Lusaka. About more than 10, 000 people were left homeless (Reuters, 2023). According to DMMU (2023) Zambia has continued to experience flooding which is evident from the 2022/2023 rainy season where in 37 districts of 9 provinces, with Southern Province suffering the worst effects. Nearly 25,768 houses (154,608 individuals) affected by the floods in 5 Districts of Southern Province, this scenario has had disastrous effects. Three districts in all, including Namwala, Monze and Mazabuka districts, were mostly affected with 1,394 households forced to seek shelter in 20 camps. There were also added 7 camps in Namwala with 380 displaced households, 12 camps in Monze with 816 displaced households and 1 camp in Mazabuka with 198 displaced households in this respect. Unfortunately, floods ravaged Namwala during the rainy season of 2021/2022. About 164,012 out of 546,708 cattle or 30 percent of all the cattle in Namwala, Monze, and Mazabuka, were exposed to flooding and associated dangers such animal diseases and restricted grazing land. This means that the floods have not just had an impact on families and households (Red Cross Red Crescent, 2023).

### **2.5.1 Lived experiences of Flood victim in Kanyama and George residential areas**

According to Future Resilience for African CiTies and Lands (2022) contends that Kanyama residential area is the biggest ward in Zambia. The ward consists of 250,000 plus people residing there whose major economic activity is running small businesses while population of George residential area has 65,000 people, 60 percent of them are youth. With relation to the experiences with floods, one participant from the study in George residential area said the following

*“We are affected by these floods, we don’t have proper drainages, when the rain comes it ends up in people’s homes. There is a problem with the mindset of our people. We need help collecting garbage. Diapers and other things that get dumped in the existing drainages which are also shallow. Solid waste is what we are struggling with. People don’t want to come and service this area. People don’t know where to throw garbage and this contributes to flooding. We need to invest in mindset change. Drainage is almost inexistent”* FRACTAL (2022:6-7).

FRACTAL (2022) further claims that the study noted that 70 percent flood victims had to stop working while 70 percent lost possessions or part of or all of their houses and 75 percent became ill due to flooding. In terms of preparation, the study analyzed that, about 70 percent felt that people in their community were not prepared to cope with a flood when it came. Lack of preparedness among the residents in Kanyama and George residential areas was noted from this study as an attributing factor to chronic experiences of floods.

## **2.6 Kuku residential area is a marginalized community**

One of the marginalized communities of Lusaka is the residential area of Kuku. Marginality is “Involuntary position and status of an individual or group at the margins of social, political, economic, ecological, and biophysical systems”, according to Gatzweiler (2013:1). This limits their freedom of choice and prevents them from accessing resources, assets, and services. Additionally, it hinders the growth of abilities and eventually results in great poverty. The people in marginalized communities are often good at keeping a low profile (Garret, 2022). Additionally, residents of marginalized localities like the Kuku residential area are frequently impoverished. People who are poor have less of a social and material foundation to "bounce back" from catastrophes when they happen. Poverty forces people to cope with unsustainable and risky short term decisions, which raises the chance of future disasters (Walker, 1989). These unsustainable practices include temporary relocation, using substandard materials to construct their homes and stuffing the sack bags with sand soil.

## **2.7 Proximate determinants of chronic floods in Kuku residential areas**

On the low-lying Earth surface area of Lusaka lies Kuku residential area. The Zambia Meteorological Department (2022) had forecasted that during the rainy season of 2021/2022, low lying areas in Lusaka would experience flash floods and floods. It included regions with saturated soil moisture. This was due to high water tables in low-lying locations making flooding a common occurrence. In addition to that, it's because there is less surface area for infiltration in such areas. As a result, the Kuku residential area is susceptible to continuous flooding (Nchito, 2018). As the area becomes more urbanized, there are more impervious surfaces like roofs, roads, sidewalks, and large asphalt or concrete surfaces, which have resulted in more water runoff. As a result,

precipitation runs off more quickly and urban island effects are amplified. The inadequacy of constructing and maintaining drains, both regulated drains and uncontrolled informal drains installed by the people has continued to be a major concern and a cause of urban flooding (Nchito *et al.*, 2018; Mensah and Ahadzie, 2020).

Illegal quarrying during the long dry season is also another cause of flooding. Due to the ponds being filled with surface runoff water from the quarries, the flooding is made worse. Therefore, after trapping the surface run-off water, the unevenness of the ground surface leads to the formation of water ponds. One of the reasons for frequent floods is the quarrying activities that take place year after year (Siachoono, 2013).

One of the main causes of floods in Zambia is the prevalence of extreme poverty. Due to this, underprivileged populations frequently have high-risk flood areas as their residential areas, where both dangers and vulnerability exist. Projected variations in temperature and rainfall are the hazards indicators. Existing water stress, access to better water sources, and average household income are all indicators of vulnerability. Regarding risk hotspot areas, the severity of the effects of natural disaster events depends on how socioeconomically vulnerable a population is (Righi *et al.*, 2021). Flooding significantly endangers the overall welfare of the Kuku residential area. Additionally, Zambia's urban poor communities are characterized by a large percentage of female household heads who lack literacy (Mwila, 2020). In the post-independence era, when all citizens of Zambia could exercise their right to freedom of movement, the proportions of women in the low-income self-help housing areas of the Lusaka slums were more evenly distributed. Therefore, unaccompanied women made a living by offering sexual services (Mulenga, 2020). These women typically don't keep up with household maintenance or offer suggestions for ways to lessen the consequences of local flooding. In addition, women have fewer opportunity to pursue higher education (Cigala *et al.*, 2022). Due to this, individuals lag behind in their awareness of natural disasters and how to prepare their communities for a flood. In the wake of a natural disaster, this influences their coping strategies, adaptation and resilience (Lowe *et al.*, 2015).

The housing density is high in the Kuku residential area. It shares a large percentage of sealed land, enabling chronic flooding than in other informal communities in Zambia. Since it is an informal settlement, housing needs is rapidly expanding cities in many developing countries which has been

seen as both a problem and a solution (Todaro ,1994; Srinivas, 2005). This worsens as a result of the process of replacing natural vegetation with developed environments, which decreases water infiltration (Sugianto, *et al.*, (2022). As a result of their inability to lead regular, pleasant lifestyles, the locals in the area experience housing insecurity.

The Kuku residential area, according to Zambia Daily Mail (2018), is characterized by an inadequate drainage system. In an example, the absence of drainage systems results in large ponds that serve as mosquito breeding grounds, where malaria is spread (Ali and Sulaiman, 2006). The poor and unhygienic environment that is typical of haphazard settlements like Kuku residential area makes this condition worse as shown in figures 2.2 and 2.3 are flood scenery in Kuku residential area. This, according to Ministry of Local Government and Housing (2017), is caused by an increase in urban population growth, which results in the emergence of improvised settlements.



Figure 2.2: Flooded houses in Kuku residential in Lusaka  
Source: Lusaka times (2021)



Figure 2.3: Severe floods mixed with garbage in Kuku residential area.

Source: Lusakatimes (2021)

## **2.8 Measures undertaken in kuku residential area to mitigate chronic floods.**

Various mitigation measures have been installed in Kuku residential area. Mitigation is defined as "a sustained measure done to lessen or eliminate the long-term danger to people and property from natural hazards and their effects" by the Federal Emergency Management Agency (1997:1). The International Federation's Disaster Relief Emergency Fund (2010) claims that the Zambia Red Cross Society in 2010 worked with the local government to satisfy the needs of the displaced families. Other mitigation strategies include; the provision of relocation, providing a clean water supply and ensuring proper sanitary facilities were or are the main concerns hence 100 volunteers in total were enlisted to help with relief efforts and improve hygiene in this area.

Residents of Kuku residential area use sandbags and stone bags in flooded areas to stop water from flooding their homes. Some individuals wade between flooded areas by walking on top the sandbags as a bridge. On uneven terrain, some people pile up leftover sand mixture to help water swiftly drain to surrounding low lying places.

When Kuku residential area experiences flooding, the government usually relocates families through Disaster Management and Mitigation as shown in Figure 2.4. The continued heavy rains

in 2021, led to numerous residents whose homes were submerged to be evacuated (Zambia National Broadcasting Corporation, 2018).



Figure 2.4: Relocated Kuku residential flood Victims at the new place on the up land near Kafue Road.

Source: Lusakatimes (2021).

## 2.9 Characteristics of informal settlements

Kuku residential area was unplanned from its inception. It is currently both an informal and improved settlement. Unplanned settlement, according to Kiptoo (1990) are any unintended, uncoordinated settlements constructed on land without consideration of any predetermined planning norms. Squatters are those who have occupied such settlements. According to Future Climate for Africa (2016) the unplanned settlements frequently experience flooding, have poor solid domestic garbage disposal. This has been a factor in the spread of several health epidemics. Most of the times, the arrangement of roads and paths is haphazard and has no discernible connection between them at three way intersections. They have small houses with tin roofs and at

times with damaged asbestos roofs that are arranged erratically and inconsistently from one another (Chiwele, 2022). They are a source and provider of less expensive and accessible accommodation (Ministry of Local Government and Housing, 2017). This opportunity has contributed to an increase of the residents' population. According to Chiwele (2022:2) "Lusaka's informal settlements are denser than the surrounding residential areas and have become more over the years. In 2000, they had a density of 126 people per hectare. By 2020, this had increased to 148 people per hectare significantly higher than the city-wide built-up density of 95 people per hectare". Over time, it has resulted in service and housing shortages in the Kuku residential area.

## **2.10 Case studies of experiences with floods in different countries**

### **2.10.1. Experience of the natural flood disaster victims in South Indian floods in 2015**

This phenomenological study sought to investigate the variety of flood disaster victims' experiences in South India in 2015. According to Jobin *et al.*, (2020), the study presents ten Disaster phases include "expected, but not expected," "save only life," "indolent," "reluctant," "empty nest," "lost everything," "hornbill," "saturated with donated materials," "life initiation," "start a life from zero point," "recovery," and "normal life." Disaster phases also include "disaster becomes a nightmare" and "disaster becomes an anecdote."

The study also revealed that it had taken survivors several months to transition from the disaster phase to the recovery phase. They said that they could not return to their pre-disaster lives or live their lives as they had before the calamity. After the incident, the survivors noted changes in their quality of life. Through a "hornbill phase- look at help," the affected participants in this study attempted to maintain their quality of life. The majority of those who were impacted by the accident sustained total damage. The study revealed that the victims had described going through a series of crises in their lives, from natural disasters to socioeconomic upheaval to psychological tragedies. The findings of this study provided insight into the actual flood victims' experiences.

### **2.10.2. Floods in Australia, 2017**

The 2017 floods in New South Wales were the subject of a phenomenological research by Matthews (2019) in Australian studies. He discovered through cross-sectional data that those who

had their homes or places of business flooded or evacuated were more likely to have psychological discomfort and post-traumatic stress disorder. Another study that examined the effects of the 2017 floods in New South Wales discovered that those who had their houses or places of business inundated had higher rates of suicidal ideation than those who were not directly affected. According to the study's findings, flood victims who have suffered significant damage are more likely to suffer from psychological anguish than those who weren't directly harmed.

### **2.10.3 Negative experiences of Flood Victims in Nigeria, 2018**

The results and debate on the flood victims in Kaduna state were 'shocked and confused' as one of the unfavorable experiences of flood victims in this study (Hamza,2019). The investigation also revealed that following the disaster, flood victims were left stranded. This shows that the most typical experiences of flood victims are being trapped and having to think about where to find food and shelter, which is the posttraumatic part of flooding. The results of this study also showed that flood victims suffered from the loss of priceless items. For this reason, when people find themselves in situations where they have lost precious items, they get hopeless, dissatisfied, and it activates a variety of emotions. The study's results were reportedly mocking remarks made by neighbors of flood victims. Flood victims had every propensity to retaliate violently when they were made fun of based on their circumstances, which would actually result in conflicts.

### **2.10.4 Flood Disasters experienced by Louisiana school communities, 2005-2020.**

In another study conducted by Milazzo (2021) five themes were emerged during the study. They include (a) emotional trauma, (b) loss of pertinent records and classroom resources, (c) downtime during and after flooding events, (d) healthy life meanings and outcomes and (e) required resources came from various sources during and after flood events.

This qualitative phenomenology study's goal was to comprehend the actual experiences of people who were a part of K–12 public and private school communities in Louisiana that were affected by flood disasters between 2005 and 2020. Trauma affected the entire afflicted community, including the affected instructors, administrators and student populations.

### **2.10.5 A Phenomenological study of lived experiences of 2022 flood Survivors in Rajan Pur District-South Punjab-Pakistan**

Akbar (2022) carried out a research study in Rajan Pur District south Punjjan.the study reported five essential themes which made the essence of the flood experiences. These are (1) confusion and undecidedness (2) chaos and selfishness (3) shame and guilt (4) shock and disbelief (5) hopefulness and expectations.

This study concluded that the flood survivors had an experience of confusion and undecidedness as they were in lack of trustworthy information regarding the flood risk in their area The flood survivor who expressed their feeling as chaos and selfishness because it unlikely that they would a flood hence there was commotion. While some homeless flood survivors felt guilty and ashamed to relay on the friends and relatives as they were left homeless, other were in shock and in disbelief because the flood came unprecedented to their knowledge. Some expressed their experience as that of hopefulness and expectation because they looked up to God and the Government to reconstruct their lost property.

### **2.11 Summary of the reviewed literature**

This chapter was a review focused on two theoretical frameworks, floods and flood victims from different regions. The two theoretical frameworks shaped the understanding of the culture of chronic flood victims and the lifeworld existentials led the four systematic extent pillars in studying the lived experiences of the flood victims in Kuku residential area. The aforementioned studies under sub section 2.10 of this chapter have alluded to, one common flood victim's experience and that it is Post Trauma Stress Disorder (PTSD). This Literature review however, does not explore further on the challenges, opportunities, reasons why these flood victims have been living in flood prone areas as residents and their coping strategies used in times of floods. To this effect, this study explored further by taking into consideration the aforementioned research gaps. This was to deliberately learn how they been surviving and remained resilient so that other flood victims can avoid suicidal ideation as noted by Matthews (2019) and implement sustainable flood management projects by learning from Chronic flood victims from Kuku residential area of Lusaka district in Zambia.

## **CHAPTER THREE: DESCRIPTION OF THE STUDY AREA**

### **3.1 Introduction**

This chapter describes the study area; Section 1 reveals the location of the Kuku residential area, Section 2 draws the background of Kuku residential area, Section 3 explains the geology of the Lusaka district, Section 4 explains the climate in the Kuku residential area and Section 5 explains the socio economic activities in the Kuku residential area, Section 6 exposes the population of informal settlement in Lusaka. Section 7 precisely claims the structure of built environment in the neighborhood within kuku residential area and section 8 gives details on the reasons to why Kuku residential area was chosen for this nature of study.

### **3.2 Location of Kuku Residential area**

Kuku residential area is located in Lusaka District of Lusaka Province. Lusaka is located between longitude 28°12'0"E and 28°24'0"E and latitude 15°3'0"S and 15°24'0"S (Mubanga, 2017). The residential area is close to the railway line that connects the residential areas of Kuomboka and Chawama (Mwila, 2020). Muyunda (2008) precisely describes its location that it lies second to the South of the City Centre after Misisi residential area between Chawama residential area to the south and to the North lies Misisi, east lies Kamwala south residential area and west is boarded with Kafue roads and John Laing.

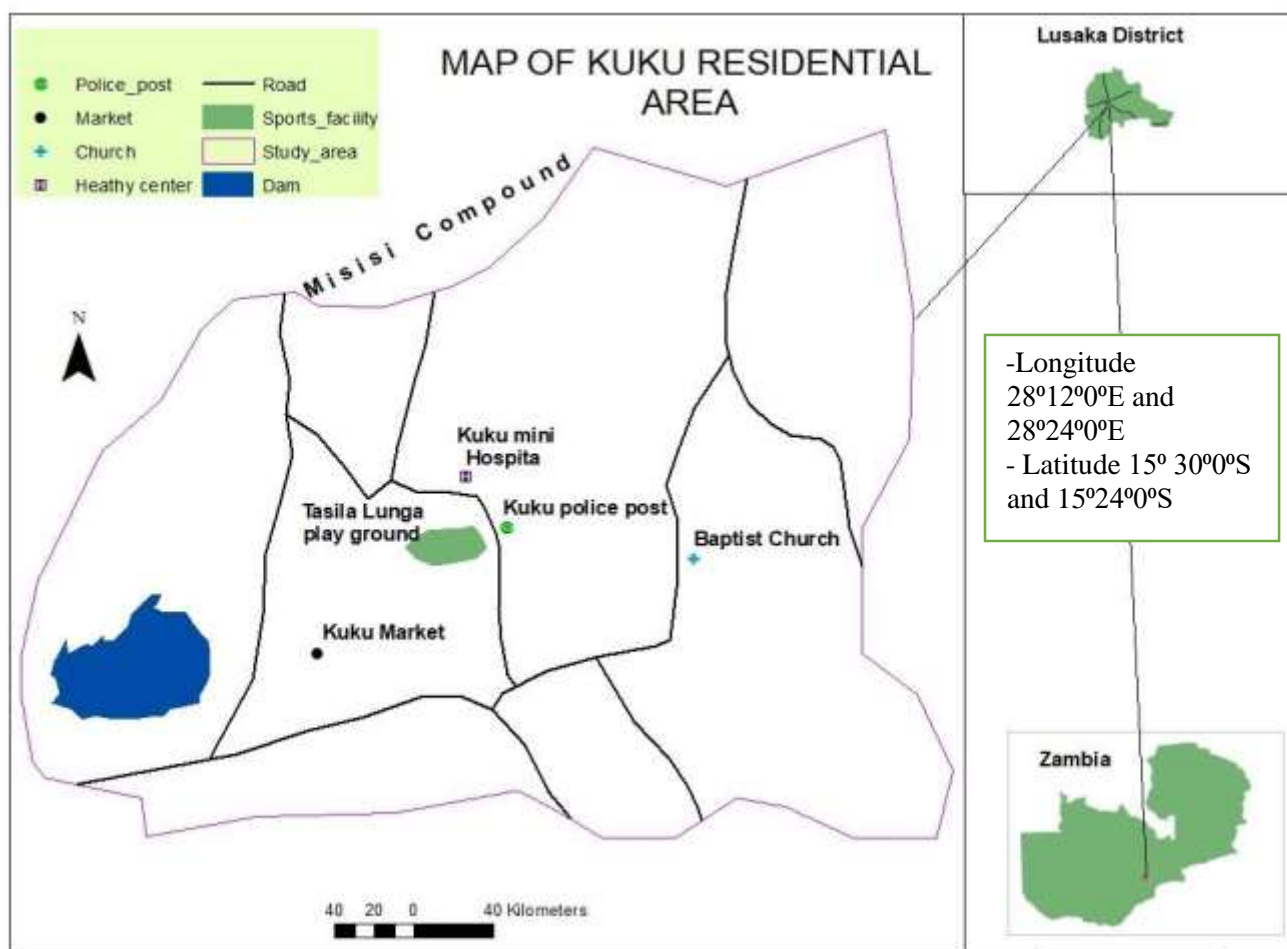


Figure 3.5: Map of the Kuku Residential area in Lusaka district of Zambia  
Source: Field data (2022)

### 3.3 Background of Kuku residential area

Kuku is one of the over 10 unplanned residential areas in Lusaka District. It was originally a farm owned by a White man who was named Kuku at the time when Kenneth Kaunda was President. It started as an unofficial village on agricultural property where low-income earners were being suppressed. It is was also known as Cooks residential area an English name (Muyunda,2008). Mulenga (2003) argues that unplanned settlements gradually became a self-help urban housing residential area. Rural urban migration and lack of urban settlement measures or policies immediately after independence are among the factors that have attributed to the persistent flooding in the residential area apart from being an originally low-lying farm land in the pre independence era.

The rise in population of Lusaka had put a significant strain on the already inadequate infrastructure which has included a lack of proper housing, water and electricity (Ministry of Health, 2017). Due to this circumstance, unplanned and illegal settlements were built, particularly land crisis led to a surge in both urbanization and unofficial housing (Mulenga, 2003). With the change in laws and policies in Zambia, it is currently an improved area or informal settlement, which according to Ali and Sulaiman (2006:2) informal settlements are defined as residential buildings built on “planned” and “unplanned” areas which do not have formal planning approval. Such settlements, according to Ministry of Local Government and Housing (2017), are small sized sites, crowded streets and they make expanding the sewer network problematic because the area is limited to pave way for the sewer pipe lines. This study therefore focuses on chronic flood victims' experiences, which haven't been extensively covered in literature. It was conducted to find out more about the local flood victims' actual experiences. To visionalise the study area as shown in Figure 3.5 is map of kuku residential area and figure 2.2 depicts a few houses in floods.

### **3.4 The Geology of Lusaka district**

The Lusaka district's geology is distinguished by sub rocks made primarily of dolomite and limestone formations, which are linked to the slow rate of absorption of the rainwater that accumulates during each downpour. The marble known as Lusaka dolomite is said to be the foundation of the city of Lusaka (Nkhuwa, 2009). The marble is split by a Karst network of cracks. These have either been filled with dirt or have remained as open hollows. Marbles and soluble rocks like gypsum and rock salt are vulnerable to environmental issues because they contain karst features. According to Kundzewicz (2004), a variety of changes in landuse result in changes to hydrological systems. Water runoff is accelerated by land use practices like urbanization and deforestation. In Lusaka, it also results in a rise of impermeable surfaces including roofs, walkways, roadways and parking lots in addition to vast asphalt or concrete surfaces.

### **3.5 Climatic Conditions of Kuku residential area**

The Agro-Ecological Region IIa is where Lusaka district is located. Altitude and the rainy season, which lasts from October to April, often moderate the tropical weather that prevails in this region. Inter-Tropical Convergence Zone (ITCZ) influence on local climate causes Northern section of

country to receive more rainfall than Southern half of country. In plateau areas and low-lying areas, respectively, altitude also influences the temperature ranges between low and high (Mubanga, 2012). Simatele (2010) also notes that weather-related experiences in Lusaka are more frequent and severe, including major floods, extremely high temperatures and cold spells. The alteration in the rainfall pattern in 2021 is evidence of this. For instance, rather than the usual first rains in November, the first rain was in December for 2012/2022 rain season which characterized consecutive heavy rains with thunder storms over a short period of time. Due to its location in Agro-Ecological region IIa, Lusaka District experiences a total mean annual rainfall of between 800mm and 1000mm (Mubanga, 2012; Muchanga, 2011).

### **3.6 Socio economic activities in Kuku residential area**

According to Habasonda (2012), residents of unplanned settlement areas engage in a variety of sporadic economic activities to make a living despite having low levels of education. The selling of *salaula* is one of the economic activities. Second hand or previously owned things are referred to as *salaula*. Some residents operate saloons inside their homes, while others have improvised shops where they sell goods and phone accessories. Wheelbarrow transportation of consumer items from one part of town to another is the other economic activity. The other locals sell roasted chevon, also known as *muchopo* or *shokaz* locally, from barbecue stalls at the sides of the roadways. Goat offal is referred to as *muchopos*, while any other sort of roasted flesh is referred to as *shokaz*. To survive, the ladies brew *kachasu* (Mwila, 2020). Beer that is traditionally fermented using yeast, sugar, and maize flour is called *kachasu*. To ensure their survival, the locals in the area work in quarries. Despite the trench flooding risks associated with quarries to the residents, it is viewed as a substitute way to increase household income (Siachoono, 2013).

### **3.7 Reasons to why Kuku residential area was chosen for the study**

It is an improvement area that needs attention in the trajectory of sustainable eco-friendly planning and resources mobilization. Hence, exposing the lived experiences of the flood victims and their vulnerability to flooding, may help the policy planners and fiscal budget allocation executive to consider such residential areas. This will improve the wellbeing of the flood victims. It may also facilitate effective flood area management strategies.

Kuku accommodates a large population in informal employment, where part of the population is employed in high cost residential areas as they offer cheap labour. Therefore, there is a symbiotic relationship between the formal and informal employment which can either increase or reduce the economic status production of the country. For example, the failure to maintain such areas will mean more people will be negatively affected. This will have a direct impact on their employers as they will not perform effectively in formal employment hence a drawback on the economy.

Kuku residential area is under Nkholoma ward which has the biggest population of 208,419 people in Chawama constituency (Zamstats, 2022). If flooding is not mitigated in due time in Kuku residential area, it is likely to get out of hand with the growing population and built environment. It will affect the general health status of the people and the environment through the outbreak of diseases and deterioration of the environment. These may lead to Zambia as nation to fail to achieve some of the Universal Sustainable Development Goals (SDGs) which are; 1. No poverty, 3. Good health and wellbeing, 6. Clean water and sanitation and 11. Sustainable cities and communities.

## **CHAPTER FOUR: RESEARCH METHODOLOGY**

### **4.1 Introduction**

The study methodology that was employed to generate the data from the participant in Kuku residential area as discussed in this chapter. It gives an overview of the research methodology framework, followed by the specific breakdown thus philosophical view, paradigm, ontology, epistemology, methodology, research design and methods.

### **4.2 Overview of the methodology framework**

In order to understand the adoption of hermeneutic phenomenology as the philosophical view for this research study, there are four basic essential elements of the research process that must be addressed and these are; the philosophical worldviews being represented by different paradigms, Type of study (Ontology and Epistemology), Type of research strategies to be used (Methodology) and Research methods for collection and analysis of data(Methods) (Crotty, 1998) and (Yilmaz, 2013) in (Singh, 2019).

The word Paradigm was first used by Thomas Kuhn (1962) to represent a Philosophical way of thinking (Kivunja and Kuyini, 2017). According to Rehman and Alharthi (2016) there are four components of a research paradigm; ontology, epistemology, methodology and methods. A Paradigm can be understood as a set of beliefs that represents a worldview (Guba and Lincoln, 1994). This research study specifically drew its attention on interpretivism because that was the philosophical orientation which was applicable to this study. The methodologies used in interpretivism are; case studies, phenomenology, hermeneutics, ethnography (Scotland, 2012). Therefore, this research study adopted a phenomenological hermeneutics methodology/approach under the interpretivism philosophy. The following section of chapter four has been narrowed down precisely stressing the actual philosophical view and the type of methodology used to uncover the lived experiences of the chronic flood victims in Kuku residential area in Lusaka.

### **4.3 Philosophical orientation of the study**

The philosophy underpinning the study was anchored on hermeneutic phenomenology study under interpretivism. The ontological stand point of interpretivism is that reality is subjective

(Scotland, 2012). Meanwhile, the role of the researcher was to become a part of the subjects being studied so as to understand the contextual meaning that the subjects are making. A complete effort was made to understand the viewpoint of subjects being observed rather than the viewpoint of the researcher. It is also referred to as constructivism paradigm because the reality is socially constructed (Kivunja and Kuyini, 2017).

The epistemology of interpretivism is transactional and subjectivist where researcher and subjects under investigation are assumed to be linked interactively and findings are created as the investigation progresses (Guba and Lincoln, 1994). Interpretive paradigm does not question ideologies but accepts them as they are (Scotland, 2012) and inductive approach was used instead of the deductive approach because “they tend to see theory as deriving from data collection and not as the driving force of research” (Grix, 2004:108). In addition, the Interpretive methodology was used to understand the phenomenon from an individual perspective, keeping in mind the historical and cultural context of the individual’s place (Scotland, 2012) for example as shown in table 1: showing the characteristics of the sample in Kuku residential area of Lusaka district in Lusaka province. Table 1, visionaries the history of the 16 participants by exposing the number of annual episodes of floods the victims have experienced and the period they have been living in Kuku residential area. Adding on from the angle of a interpretivism philosophic view, the Interpretivists researcher relies on qualitative data for analysis of data Mackenzie and Knipe, 2006), that is the approach that has been undertaken by this study as elucidated in this chapter and chapter five.

#### **4.4 The hermeneutic phenomenological methodology**

The hermeneutic phenomenological methodology is a purely and entirely one of the branches of a qualitative methodology which this research has adopted. It is also known as the interpretive or existential phenomenology or Heideggerian phenomenology or Gadamarian hermeneutics, Philosophical hermeneutics (Dibley, 2020). It is “non-foundationalist” meaning it focuses on the meaning that arises from the interpretive interaction between historically produced texts and the reader. In this way, interpreters participate in making data (Musa, 2021). The rationale for incorporating this methodology was to address the set-out aim and objectives of this research by employing qualitative research techniques. The need to study a sample from the population where

the identified variables cannot easily be measured or hear silenced voices from the flood victims called for the use of qualitative techniques. According to Crist and Tanner (2003) the hermeneutic phenomenological methodology is used when the research question seeks meanings of a phenomenon that intends to disclose understanding of a human experience as Heidegger's terms it as lifeworld referring to the idea that 'individuals' realities are invariably influenced by the world in which they live therefore the possible way of data generation was by talking directly with people, going to their homes or places of work and allowing them to tell the stories unencumbered by what the researcher expected to find or what has been read in the literature. Therefore, the hermeneutic phenomenological methodology was applied for the researcher to bring out, understand and document the lived experiences of the chronic flood victims in Kuku residential area.

#### **4.4.1 Ontology and Epistemology of Hermeneutic phenomenology study**

Neubauer *et al.*, (2019) claims that Hermeneutic phenomenology's ontological assumption is that lived experience is an interpretive process is situated in an individual's lifeworld while from the epistemology point the Observer is part of the world and not bias free through understanding the phenomenon by interpretive means. The Researcher's role in data collection reflects on essential themes of participant experience with the phenomenon while simultaneously reflecting on their own experience. Hence, the iterative cycles were used in capturing and writing reflections towards a robust and nuanced analysis taking into consideration how the data (or parts) contributed to evolving understanding of the phenomena (whole). Hermeneutic phenomenology not only inherits the philosophical tradition of phenomenology under the interpretivism paradigm but also emphasizes the historicity for example a person's history or background. It is with this perspective that this research has precisely taken into account the Participant's characteristics in Kuku residential area in order to explore, understand their history, interpret the text and meaning of their chronic flood lived experiences as shown in Table 1.

#### **4.4.2. Axiology**

According to Wahyuni (2012:70) the axiology of interpretivism paradigm research "is value bond, the researcher is part of what is being researched, cannot be separated and so will be subjective".

To capture the lived experience of the chronic flood victims in the residential area from the reality of the flood victims, Interpretivists researcher used an emic viewpoint in the generating of data and its analysis were significantly influenced by the experiences and values of both the researcher and the participants.

#### **4.5 Research Design**

A Hermeneutics Phenomenology, descriptive and explorative design were used. Hermeneutic phenomenology research design according to Simui (2021) contends that it incorporates the four reflective four lifeworld extentials which were initially Heidegger's brain child and later expanded by Van Manen. This facilitated an enabling environment to have a complete understanding of the lived experiences of the chronic flood victims in Kuku residential area in line with the hermeneutics study. The use of explorative and descriptive research design played additional and in-depth role in extracting the contemporary data of the lived experiences which facilitated the inclusion of holistic measures to improve chronic flood victims' wellbeing. This was because the explorative aided the research with the known to unknown data while descriptive enabled the study to expose their feeling of being in verbatim and pictorials of lived experience of before, during and after the floods. This additional research designs study was used are to facilitate an insightful know how on the lived experience with regards to surviving in the flood prone area. The provision of pictures where necessary with the permission of the target sample in Kuku residential area validates the verbatim from participants and vice versa.

#### **4.6 Sampling method/Procedure**

Sampling is a "procedure to select a sample from individual or from a large group for a certain kind of research" (Bhardwaj,2019:2) In this research, snowball sampling was utilized as it's a technique for selecting sample using social networks. Snowball sampling involves asking initial participants to invite their colleagues, who have experienced the same phenomenon, to participate in the study (Krennerich, 2019). Snowball sampling was used on participants willing to share and describe their lived experiences because it is a requirement for using such a sampling method (Burns and Grove, 1987). The sample for this research was unique because most importantly, they

were only participants who had all experienced the phenomenon being explored and articulated their lived experiences (Manen, 2014).

The saturation of sample size was attained at 16 participants. Creswell (2016) argues that smaller sample sizes allow greater depth of findings in qualitative study so as not to generalize data from the sample. Subsequently, the small sample size considered in this study was enough as adequacy in phenomenological studies is achieved when the researcher experiences redundancy in descriptions of the lived experiences or saturation (Hungler and Polit, 1995). According to Elmusharaf (2018) saturation is the general rule in qualitative research that a researcher continues to sample until no new information is being availed from the different participants. Milazzo (2021) adds that measurement that can be used to determine saturation is inducing the point in the study wherein no new inductive codes are developed. The saturation therefore for this research was attained at 16 participants hence the sample size was 16 from Kuku residential area in Lusaka district.

#### **4.6.1 How the first participant was sampled from the study population**

The first participant was sampled by the researcher by initially contacting a few flood victims who referred the researcher to a flood victim who had lived experience with flooding Kuku residential area for three or more annual episodes. There after once the first participant's unstructured interview was executed, she directed the researcher to other chronic flood victims within Kuku residential. The inclusion criteria used was that, only participants who; had lived in Kuku residential area, had experienced flooding for more than three times and were willing to tell and share their stories were selected. Participants with three or more annual episodes of flooding experiences was taken into account because they had substantial lived experiences to answer to the objectives for the study and they would have also learned and adopted ways to mitigate the flooding and adapt to the area.

#### **4.7 Data tools of collection**

In this research, in depth interviews or unstructured interviews and audio recording were used to generate information from the sample in Kuku residential area. An in-depth interview is an unstructured and direct technique of obtaining insights in which a single participant is probed by

a skilled interviewer to uncover underlying motivations, beliefs, attitudes and feelings on the topic of enquiry. With this background, it enabled the researcher to understand the nature and composition of the lived experiences of chronic flood victims in Kuku residential area being researched rather than precise measurement (Akhtar, 2016).

The unstructured interviews exposed the researcher to unanticipated themes and helped to develop a better understanding of the participants' social reality from the interviewees' perspectives. Unstructured interviews cannot be started without detailed knowledge and preparation, if the researcher intends to achieve deep insights into people's lives (Patton, 2002). Therefore, the researcher kept in mind the study's purpose and the general scope of the issues that would be discussed in the interview (Fife, 2005). The researcher's control over the conversation was minimal. Hence, the researcher encouraged the interviewees to relate experiences and perspectives that were relevant to the problems of interest to the research at hand (Burgess, 1982). In the same vein, Yuksel and Yildirim (2015) also points out that the researcher informs the participants about their positions in phenomenological research that answers the research questions based on the participants' experience and their narratives.

The unstructured interviews massively contributed to this research as they accommodated seeking of the information on the chronic flood victims lived experiences in Kuku residential area. Alvarez and Urla (2002) contended that unstructured interviews are also useful in finding the patterns, generating models and informing system design and implementation. Hence data collection stopped once saturation was obtained and no new variation of experiences continued to arise through unstructured interviews. Simultaneously while the participants were relating their experiences, the researcher recorded with the help of a phone audio recorder. In the fieldwork, the audio recorder was a vital instrument for this specific research study as it made the data collection by the researcher much flexible in case some statements were not written down. Following repeated listening, interviews were recorded and subsequently transcribed. The camera was used to capture the footage of participants prior to and during the rainy season as well as their environmental conditions.

#### 4.8 Data Analysis

Data analysis involved the researcher and in support, Neubauer *et al.*, (2019) asserts that hermeneutic phenomenology recognizes that the researcher, like the research subject, cannot get rid of his/her lifeworld. Instead, the researcher's past experiences and knowledge are valuable guides to the inquiry. It is the researcher's education and knowledge base that leads him/her to consider a phenomenon or experience worthy of investigation. Hermeneutic phenomenology is focused on subjective experience of individuals and groups. It is an attempt to unveil the world as experienced by the subject through their life world stories. This school believes that interpretations are all we have and description itself is an interpretive process. To generate the best ever interpretation of a phenomenon it proposes to use the hermeneutic cycle. It is for this reason that this research has adopted the hermeneutic cycle in order to hook up every basic unit of the chronic flood experiences in kuku residential area. Therefore, Data analysis was performed by applying the hermeneutic cycle that constitutes of reading, reflective writing and interpretation in a rigorous fashion (Laverty, 2003) as shown in figure 4.6.

The genesis of this cycle was put into motion by Hans-Georg Gadamer (1900–2002) who developed and expanded this circle to the fundamental principle of human understanding on the nature and his state. It shaped Heidegger's interpretative philosophy by introducing the hermeneutic circle, an evolutionary version of Heideggerian interpretative hermeneutic philosophy. The hermeneutic circle is primarily based on the original work of Friedrich Schleiermacher (1834) and Wilhelm Dilthey (1911), as well as work of Heidegger and Ricoeur's (1976) contribution. Hans Georg Gadamer applied textual hermeneutics to the human experience by application of the hermeneutic circle. It is an approach where interpretation takes place in a circular process, from the whole to the part of the individual and then from the part of the individual to the whole, in order to understanding (Raisi, Salmi and Magarey ,2020; Hasanpur, Keyhanpour and Nourozitalab,2017). Hermeneutic circle is important as defined by (Hoy, 2006: 51) as the "understanding the components is necessary for understanding the whole while understanding the components, there should be understood as the whole". To be more detailed Bontekoe (1996) identified the basic form of the hermeneutic circle as follow; Seeking the meaning of experience, Interpreting the participant's story, Connecting the self in analysis, interpret different layers of text (the back-and-forth movement between the parts and the whole) and constructing knowledge by

conceptualization and integration. The aim of the hermeneutic cycle is to liberate the humanities from alienating model (Grond, 2017). It basically helped the researcher to understand the chronic flood victim's experiences to the core and as a whole of their culture.

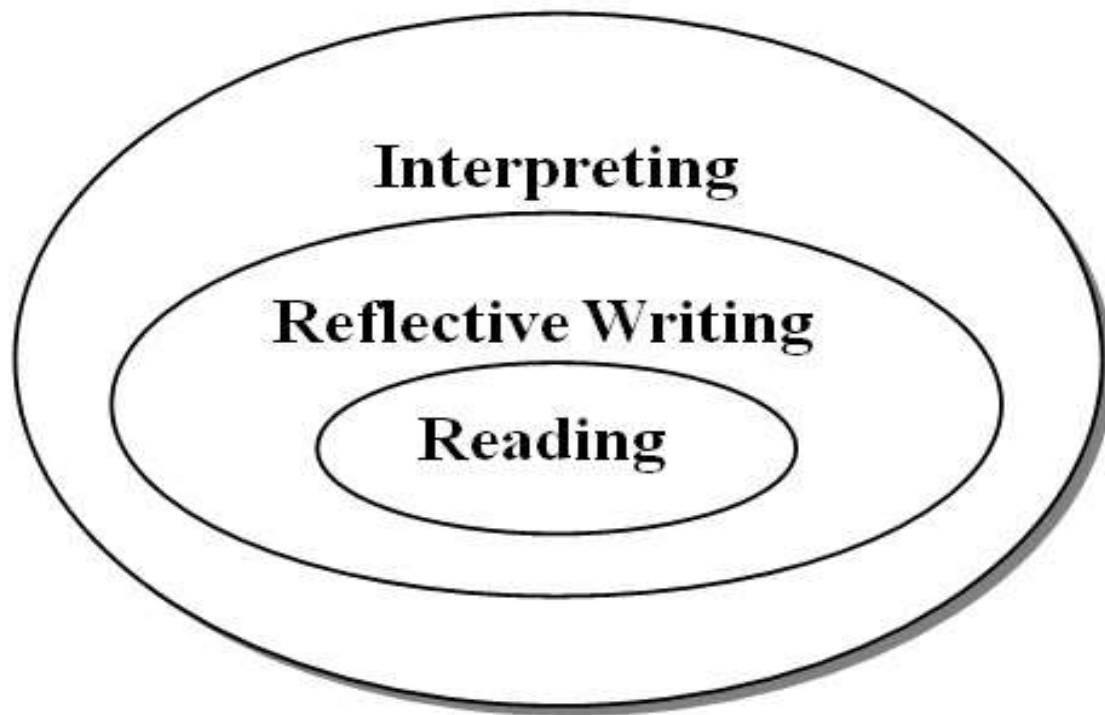


Figure 4.6: The Hermeneutic Phenomenological Analytical Cycle's Procedure in the Present Study.

Source: Lavery (2003).

#### **4.9 Testing for credibility, transferability, dependability and conformability**

Qualitative research is trustworthy when it accurately represents the experiences of the study participants. Therefore, the study findings and research process are trustworthy as the four quality checks namely; credibility, transferability, dependability and conformability were adhered to strictly as demonstrated below. The researcher used Lincoln and Guba (1985) model that identifies credibility, applicability or transferability, consistency or dependability and neutrality or conformability as essential criterion for establishing trustworthiness and quality in this Research study.

#### **4.9.1 Credibility**

The participants are the only ones who can genuinely assess the result's credibility. According to Lincoln and Guba (1985), credibility may be established through sustained engagement, reflexivity, peer and participant debriefing, and the process of member checking, which involves testing the findings and interpretations with the participants and sending all transcripts of the interviews to them for feedback. Thus, following the aforementioned tasks, hermeneutics created and displayed credibility using the chronic flood victims' behavioral experiences as their own data.

#### **4.9.2 Applicability or transferability.**

Applicability or transferability refers to the generalizability of the inquiry. It indicates that the results of the qualitative research can be applied generally or transferred to other locations or contexts in similar circumstances. It also assesses if the conclusions are applicable to or transferable to circumstances that are similar, hence the name "fittingness" (Speziale and Carpenter, 2007). Transferability enables the reader to assess whether the findings are transferable or not to their own settings. In qualitative research, the transfer concerns only to case-to-case transfer (Tobin and Begley, 2004). It is the participant's choice whether or not to transfer the research's results and consequences because the researcher is unaware of their particular circumstances (Korstjens and Moser, 2018). Results from qualitative studies are typically less generalizable because each participant's condition is thought to be unique hence the sample size 16 participants was adequate for this research study. Understanding context in depth and how it affects the phenomenon being researched is a crucial component of hermeneutics. Thus, the use of hermeneutics facilitated comprehension of the relevance of findings to different contexts (Carpenter, 2007).

#### **4.9.3 Dependability or consistency**

Another criterion to assess the reliability of the research findings is dependability, the consistency of data over time (Korstjens and Moser, 2018). It has to do with the consistency of the results. It implies that the results would be consistent if the study were conducted again in a comparable setting with the same individuals. Since validity cannot exist without dependability, neither can credibility without it (Speziale and Carpenter, 2007). An evaluation of consistency determines

whether the process of the study was “consistent, reasonably stable over time and across researchers and methods” (Miles and Huberman, 1994: 278). Hermeneutics offers the science and instruments required for consistently interpreting results (Gadamer, 2006). The hermeneutic spiral and hermeneutic circle structures, which combine horizons and discourse, help the researcher consistently confront the interpretation of a phenomenon. To ensure consistency, explicit processes must be created and used to choose the participants for each study phase as well as to collect and analyze data (Paterson and Higgs, 2005).

#### **4.9.4 Conformability**

The interpretation should not be based on the researcher’s preferences and viewpoints but rather, it needs to be grounded in the data (Kasirye, 2021). Hence, the study was on the life world lived experiences of the chronic flood victims in Kuku residential area. To this effect, their life world lived experiences are presented in verbatim and pictorials in order to enhance the confirmability quality check with the holistic application of a hermeneutic cycle.

#### **4.10 Ethical consideration**

Ethics are "a system of morals, norms of behavior that give researchers a set of moral instructions on how to do research in a morally acceptable way," according to the Oxford Dictionary of Ethics (Struwig and Stead 2001). Through the supervisor and the head of the department, the researcher was able to obtain an introduction letter from the department of geography and environmental studies at the University of Zambia. Before the interview process began, the researcher made sure that the participants have the chance to willingly participate in the research. The chronic flood victims were also given the assurance that they were allowed to stop participating at any time during the research if they so desired. In this way, consent was obtained from the recurrent flood victims in the Kuku residential area. The research gained legitimacy as a result (Cohen *et al.*, 2000). The guidelines for ethical considerations were followed when conducting this study, including obtaining verbal and written agreement from every participant. Conversational connection between the interviewer and interviewees is crucial, according to Rubin and Rubin (2005) however the researcher has an ethical responsibility because this personal contact may lead to the sharing of private information. To that effect and to ensure each participant's privacy, protection of their

identity and anonymity, a pseudonym was used in place of their real names. The names used were: Participant 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16. In support, Creswell (2007) states that using aliases to safeguard the participants' anonymity should be taken into consideration.

#### **4.11 The role of the researcher**

Both emic and etic views are widely accepted in educational research (Nigar,2020). The importance of cultural interpretations and comprehension of cultural experiences in a given group is how educational researchers define the emic (Olive, 2014). The emic highlights the internal elements and their significance of a preexisting culture (Merriam and Tisdell, 2015). The etic, in contrast, refers to any cultural phenomenon's external perspective and any conditions attached to it. Olive (2014:5) acknowledges that “when a researcher takes an etic approach to his or her study, he or she uses preexisting theories, hypotheses, and perspectives as constructs to see if they apply to an alternate setting or culture”. Being etic researcher, the interaction symbolic and four lifeworld frameworks were acknowledged in this study to help in generating the information on the chronic flood experiences from the sample.

My role in this research was both emic and etic. My emic view lies in my familiarity with the historical and current global contexts of the research (Yazan, 2018) in Nigar (2020), which was enhanced by my insider knowledge of their overall experiences, feelings and the environment. This enabled the researcher to view a phenomenon as the participant do. The participants were at ease to interact with me without any potential hesitations to share their lived experience, and the data was enhanced by their sincere responses. For the research's best results, I coexisted in my insider and outer positions. For example, unstructured interview guide was prepared inorder to explore their lived experiences. All participants' views were considered even if there were no questions in the interview guide. This was to acknowledge their different lived experiences.

The two methods did not overtake one another. Olive (2014:5) in Nigar (2020) contends that “the use of an etic perspective or approach to research is beneficial as it enables comparisons to be made across multiple cultures and populations which differ contextually. Using one strategy would have reduced the possibilities of collecting a wide variety of data, however using both approaches

enabled for a variety of data to be generated. This led to the emergence of themes and ideas (Morris, Leung, Ames and Lickel, 1999).

#### **4.11.1 How biasness was managed in the emic side of this research study**

According to Neubauer (2019:95) “To ask the research to take an unbiased approach to the data is inconsistent with hermeneutic phenomenology’s philosophical roots. Instead, researchers working from this tradition should openly acknowledge their preconceptions, and reflect on how their subjectivity is part of the analysis processes ...instead, the researcher’s past experiences and knowledge are valuable guides to the inquiry. It is the researcher’s education and knowledge base that lead him/her to consider a phenomenon or experience worthy of investigation”. Apart from the researcher having had a thirteen years of annual chronic flood experience from another unplanned settlement in an improved urban settlement, she was also a flood victim during the generation of data from participants as shown in figure 5.27. This provided an environment where the participants were freely expressing and sharing their lived experiences with chronic floods without any limitation. This is comparable to the experiences of the sixteen participants in this research sample, this may also qualify me as an insider. The researcher had prior and during lived experience of the floods as shown in figures 5.11 and 5.27 in that order. The researcher, however made an effort to be objective as an outsider whenever necessary in order to accept the contradictory evidence that emerged for this study. The use of pictorials, flood victim’s experience and their verbatim, audio recording and a hermeneutic cycle paved way for unbiased study research as the lived experienced were captured in this study as they are in reality of the participant’s experiences.

Wanstrath (2023:68) argues that “Heidegger stays in the world of beings to understand their modes of being from within the world”. In this regard, the researcher was also well acquainted with the language used by the participants therefore facilitated the coverage of their life world lived experiences in verbatim while being guided by the hermeneutic cycle. Wanstrath (2023) further supports that the role as a researcher in an emic study is shaped by Heidegger’s interpretation of having the perspective from the researcher’s lifeworld to make sense of the studied phenomenon.

#### **4.12 Limitation to the study**

There are limitations to this study. The biggest weakness in this study was that there were much more female participants than male. The male flood victims were unwilling to take the time to meet face-to-face and participate in an informal interview. Their perception was that the research was inconvenient to them. However, the ethics of Snowball sampling accommodates participants who are willing to share their lived experiences.

## **CHAPTER FIVE: PRESENTATION OF THE FINDINGS**

### **5.1 Introduction**

This chapter covers a presentation of the findings of the lived experiences of the flood victims in kuku residential area in Lusaka are presented while taking into account the hermeneutic cycle. It has been aligned with the thematic areas of this study which are represented by the research questions and subsequently provided emerging sub themes.

### **5.2 Participant's characteristics in Kuku residential area in Lusaka.**

#### **5.2.1 Sex and Age of the participants**

This study had 16 participants of which 10 were females and six (6) were males. Generally, more females were willing to share their flood experiences in Kuku residential area as compared to the males, hence the sample had more females than males (Table 1). Further most female flood victims accepted to be interviewed as a way to connect with the possibilities of getting help. The participants were in the age range of 28 to 74 years old. One female was born and raised in Kuku residential area while the rest of the 15 participants have been residents for a period of more than three years in Kuku residential area.

Table 1: Participant's characteristics in Kuku residential area.

Participant	Sex	Age	Highest level of education attained	Type of resident	Current Livelihood status	Marital status	House hold size	Period of being a Kuku resident	Lived experience of chronic floods (3 or more years)
1	Female	40	7	Tenant	sells charcoal	Married	5	12 years	3
2	Female	28	12	Tenant	Counsellor	Married	3	3 years	3
3	Male	42	6	Landlord	Pieceworks	Divorced	3	42 years	5
4	Female	46	9	Landlord	Landlord	Divorced	7	46 years	6
5	Male	72	2	Landlord	Plumber	Married	6	42 years	5
6	Male	37	9	Tenant	Sells chickens	Married	4	12 years	4
7	Male	34	10	Tenant	Pieceworks	Single	1	7 years	3
8	Female	49	10	Tenant	Volunteer health worker	Married	5	7 years	4
9	Male	78	6	Landlord	Landlord	Married	14	64 years	7
10	Female	60	5	Landlord	Sells buckets	Married	7	25 years	5
11	Female	32	12	Tenant	Sells cooking oil	Married	6	7 years	3
12	Male	48	9	Tenant	Sells beans	Married	8	8 years	4
13	Female	52	0	Tenant	Sells groundnuts	Widow	5	3 years	3
14	Female	52	9	Landlord	Landlord	Married	9	31 years	5
15	Female	74	0	Landlord	Landlord	Widow	7	46 years	6
16	Female	36	5	Tenant	Nil	Divorced	3	18 years	9

Source: Field data (2022)

### **5.2.2 Highest level of education attained**

There were only two females in the sample who had completed grade twelve school level. The modal level of Education attained by participants is grade nine (9) with four (4) participants having been in formal education up to grade nine (9). The sample also had two (2) participants who had never attended formal education. None of the participants attained tertiary education as they cited financial challenges, a lack of support from their guardians and early marriages as having prevented them from having their tertiary education.

### **5.2.3 Household Size and chronic flood victims' livelihoods**

Out of the 16 participants from the sample, nine (9) were tenants and seven (7) were landlords. Most houses in Kuku residential area were either one, two or three-roomed houses. Yet these houses have a mean household size of six (6) people. The smallest household had a single (1) occupant referred to here as participant 7, and the largest household had 14 family members in a three-roomed house. This was household headed by participant 9. In this sample, nine (9) households had more than 6 family members while seven (7) households had less than six (6) household members (Table 1). In terms of livelihood status, six (6) participants have small businesses, four (4) were landlords, while five (5) were engaged in temporal service delivery work such as plumbing, volunteer work and casual work.

### **5.2.4 Marital status and period as a chronic flood victim in Kuku residential area**

The sample consisted of a total of 16 participants where 10 participants were married, two (2) were divorced, one (1) was single and three (3) were widows. All the participants have had experienced floods in Kuku for more than three annual times during their stay in Kuku residential area. The least being three (3) years and the longest period of stay in Kuku by the participants from the sample in Kuku residential area is 64 years (Participant 9) who is a 78 years old man. Eight from the 16 participants sampled have lived in Kuku residential area for than 24 years.

### **5.2.5 Lived experience of chronic floods (3 or more years)**

All participants in the study have had experienced floods for more than three times. The study considered residents who had experienced flood incidents for three times or more as they had

enough lived experienced to provide details about the phenomenon. However, the average number of years of the lived experience of chronic floods in Kuku residential area by participants is six (6). Seven (7) participants had experienced floods for more than six times and the remaining nine (9) participants experienced it less than six (6) times but more than three (3) times as depicted in Table 1. However, the number of years one has lived in Kuku residential area was not directly influencing the number of times one experienced the floods because some parts or location of the area are not always flooded for example participant 16 has lived in kuku residential area for 18 years and experienced flood 18 times while participant 9 who has the highest number of years living in Kuku residential area has had 8 times flood experience. This means that it's not always every rainy season and every year that the all the residents in Kuku residential area experience floods as some areas are more prone to floods than others.

### **5.3 Emerging Themes**

After a two weeks' before and another two weeks' period during the rainy season of 2022/2023 of interacting with the flood victims then a month of reading the transcripts, listening to the audio recordings and viewing the footage repeatedly, the following major themes emerged as guided by the research questions;

- i. Effects of chronic flooding experienced by flood victims in Kuku residential area
- ii. Opportunities experienced by chronic flood victims in Kuku residential area.
- iii. Challenges experienced by chronic flood victims in Kuku residential area.
- iv. Copying strategies used by the flood victims to adapt to the effects of chronic flood in Kuku residential area.

What follows is a detailed presentation of findings based on the four themes and their emerging subthemes from the data generated from the participants.

#### **5.3.1 Effects of the chronic floods experienced by the flood victims in Kuku residential area**

Kuku residential area is affected by the chronic floods and the effects are experienced by the residents. This was deduced from the data generated from the sixteen participants who were part of the sample. Participants, 4, 9, 11, 13 and 15 gave details about how the chronic floods in Kuku

residential area affected their livelihood. These livelihoods include small scale businesses such as selling raw groundnuts, vegetables and rentals.

### 5.3.1.1 Loss of livelihoods

Generally, floods have had severe effects on livelihoods of people in Kuku residential area as shown in figures (5.8), (5.12) and (5.13). Prior the annual floods, the flood victims engaged in different economic activities such as charcoal business, selling of perishable food staff such as tomatoes, vegetables, sweet potatoes, Irish potatoes, kapenta, onions and cabbages as shown in Figures (5.7), (5.9), (5.10) and (5.11).



Figure 5.7: The first woman sitting is the owner of the plastic makeshift house where she lives with her six children and sells wild fruits and onions before the rain season.

Source: Field data (2022)



5.8

Figure 5.8: Flooded inside and outside of the same makeshift in figure (5.7) during the rainy season preventing her from carrying out her daily livelihood.

Source: Field data (2023)



(5.9)

Figure 5.9: Selling of charcoal

Source: Field data (2022)



Figure 5.10: Selling of thrift clothing Source  
Field data (2022)



Figure 5.11: Selling of repackaged potatoes in small plastic bags.  
Source: Field data (2022)



Figure 5.12: No business activity due to flooding  
Source: Field data (2023)

The residents involved in the aforementioned activities earn profits to sustain themselves as well as keeping their business going. The experiences surrounding the loss of livelihoods are exemplified by participants who had faced firsthand effects of floods on their livelihoods. For example, participant 13 is a 52-year-old widowed businesswoman who has three times experienced flooding in the past five years. She recounted:

*“I am trader and I make loses from my business whenever we experience floods in Kuku residential area. I sell pounded groundnuts, raw groundnuts, vegetables, tomatoes, onions and potatoes at the market. During the rainy season most customers fail to reach kuku market as the roads are flooded. The customers usually buy from the nearest selling stands to their homes as they are uncomfortable to wade through the flood contaminated water”.*

#### **5.3.1.2 Loss of welfare/ Disruption of social gathering**

Loss of welfare was also reported as a major consequence of excessive flooding as normal daily activities are usually hindered when Kuku residential area is flooded. Regular gatherings for activities such as weddings, physical Church fellowships as shown in figure 5.13, funeral gathering, outdoor activities such as games are affected as flood victims cannot generally attend or participate.



Figure 5.13: kuku residents are unable to attend congregational meetings at Apostolic church of Zion.

Source: Field data (2023)

Relating to the loss of welfare, participant 9, a 78-year-old man who has lived in the area for 64 years and has seven times been a victim of the floods in the area related an experience said;

*“There was one rainy season when my neighbor had a funeral and they had to relocate the mourners to the neighbor’s house where they were preparing the meals from and sleeping because the actual funeral house was flooded inside and out”.*

In line a funeral culture of the deceased’s relatives, the funeral needs to be held from the deceased home or from the relatives’ home however this was not the case. The owners of the funeral were saddened as they could not give a proper area to accommodate their mourners and a proper sendoff to their dead relative.

Participant 9 further recounted:

*“I am usually tormented with a lot of small frogs, worms and flies because they find their way into the house whenever there is a flood. I cannot relocate because am a landlord and I don’t have enough resources to permanently relocate. The intensity of flood effects has increased as this is seen in the increased number of households affected. Long time ago in this area, they were trees around and along pathways but this time around the number of people living in this area has increased hence have built houses and shops on free space”.*

### **5.3.1.3 Temporal relocation**

Temporary relocation has been a solution that has regularly been proposed for residents in flood prone areas. However, most residents are opposed to the idea. The case of participant 9 who is a landlord and has spent 64 years in Kuku, explains why relocation has been a challenge for most residents. Other than the fact that Kuku is a residential area, it’s also a source of livelihood for those involved in some form of income generating livelihoods. This was also well exemplified by the experience of participant 4, who is divorced and is a landlady. She and her family of six are supported through the money collected from rentals. She said;

Participant 4, who is a divorcee and a landlady revealed that;

*“The flood water flows through into the house, so I use blocks to raise the beds, sofa chairs and things such as braziers are placed on the blocks to prevent them from submerging in water. The most severe floods were in 1978,1980,2010,2011 and 2022. I was among the temporarily relocated victims and my experience was discomfoting. However, I would have not succumbed to the idea of temporal relocation at my own will if not through the DMMU”. Participant 4 as shown in figure (5.14) and (5.15).*



Figure 5.14: Flooded house with the bed perched on a pile of building blocks raised above the floodwater to prevent drowning in the flood water

Source: Field data (2023)



Figure 5.15: Submerged veranda in flood water which overflows into the house during the rainy season in the month of February 2023 in Kuku residential area.  
Source: Field data (2023)



Figure 5.16: Children eating while seated on the improvised bricks due to flooding inside the house.

Source: Field data (2023)

It was noted from the chronic flood participants that those who had experienced temporal relocations still moved back to Kuku residential area as Participant 4 recounted her memories of the process of relocation which she described it as cumbersome and that the Government through DMMU only provided short-term solutions to the flood problem. The residents still felt insecure about their wellbeing in the area they were relocated to despite the Government efforts. Hence many of the relocated residents moved back to Kuku residential area after the rainy season because its temporal relocation in tents shown in figure 2.4. This has been deduced from the flood victims themselves.

#### 5.3.1.4 Deterioration of the environment

Deterioration of the environment was observed and felt through unpleasant odours associated with flooding due to stagnant water that also served as disposal sites for garbage containing rotten foodstuff, human waste, carcasses of dogs and cats and used diapers and plastic materials. Such garbage is not porous hence water remains stagnant and eventually becomes a fertile environment for the breeding mosquitoes once flooded as shown in figures (5.17), (5.18) and (5.19).



Figure 5.17: Blocked drainage turned into a dumping site along kuku road  
Source: Field data (2022)



(5.18)

Figure 5.18: Drainage along the road filled with garbage and stagnant water in Kuku Residential area.

Source: Field data (2022)



(5.19)

Figure 5.19: Uncomfortable flooded road where flood victims wade through the floodwater polluted with, fresh and decomposed garbage, human waste and urine, non biodegradable garbage as well as frogs.

Source: Field data (2023)

Participant 15 who is a 74-year-old woman has spent the last 46 years in the Kuku residential area and has experienced flooding experience in the area at least six times, had this to say;

*“During floods, it usually smells bad around here due to the overflowing toilets. Inside my house in particular, it smells bad as polluted air diffuses from high concentrated areas to low concentrated areas (in my house for example) and I don’t enjoy my meals. During flood periods, some residents defecate in plastic bags which are thrown in the flood waters, but the bags eventually loosen up and open as they come in contact with stagnant water and other materials thrown at them such as stones and waste materials. It is through such contaminated water that we have to wade through to access our pit-latrines that are located outside our houses”* as depicted in figure (5.20) and (5.21). Therefore, some pit latrines have been raised to prevent flood water overflowing into the pit latrines. The elevation of the toilet foundation simply indicates the extent of the flooded the area and what it looks like in the rainy season.



Figure 5.20: Kuku flood victims uncomfortably wades through the contaminated flood water in order to access the outside pit-latrine.

Source: Field data (2023)



Figure 5.21: Kuku flood victim uncomfortably steps on elevated doorstep in order to access the outside pit-latrine.

Source: Field data (2023)

The verbatim by participant 15 is pictorial shown by Figure (5.22) and (5.23) that some toilets are usually raised during the construction level to prevent flood water from overflowing in the toilet. The level of the raised platform is usually determined by how high flood waters reach during the peak flood points. This kind of construction requires more material due to the need to raise the foundations of the either the toilets or houses in order to prevent the flooding which generally adds to the construction expenses.



Figure 5.22: Pit latrine constructed at a higher elevation in Kuku to prevent floods in the latrine. This indicates the severity of flooding experienced.

Source: Field data (2022)



Figure 5.23: Pit latrines constructed at a higher elevation in Kuku to prevent floods in the latrine. This indicates the severity of flooding experienced.

Source: Field data (2022)

### 5.3.1.5 Severe flooding

Chronic severe flooding as shown in figure (5.24), (5.25), (5.27) and (5.28) is currently inevitable in kuku residential area.



Figure 5.24: Same Pit latrine constructed at a higher elevation to prevent flooding in Kuku residential area during the rainy season as shown prior to the rainy season in figure (5.22)  
Source: Field data (2023)



Figure 5.25: Stagnant Floods and smelly water at the T junction within kuku market due to small blocked drainage in February 2023.  
Source: Field data (2023)



Figure 5.26: flood victims are drain out the flooded water from the house with use of buckets  
Source: Field data (2023)



Figure 5.27: Being an emic researcher, experiencing and taking note of the level of the flood water for a week.  
Source: Field data (2023)

### **5.3.1.6 Physical and emotional trauma experienced by the chronic flood victims in Kuku residential area**

The flood victims in Kuku residential area experience emotional trauma due to the chronic flood. It has been described as bad, tormenting and uncomfortable by the flood victims. The flood victims feel insecure and are always worried about their safety and that of their family, especially the children below 10 years old. Participant 1 and 11 narrated their emotional trauma experience which were sores, sleepless nights and fear to relocate or as constructed by participant 1 and 11.

#### **5.3.1.6.1 Sores**

Participant 1 is a 37 years old man who has been a kuku residence for 12 years with his family. He has experienced the flood 3 times with a household size of 5. His highest level of Education is grade 7 and he sells charcoal as a source of income. His experience with the floods is more felt as a result of the impacts through the pain inflicted on his body, He said;

*“During the rainy season the condition in the area is always uncomfortable and unavoidable. I fear the rainy because I develop sores on my legs and feet as flood water flows through my house...”*

Participant 11 is a 32-year-old female tenant and has a household size of seven. She has been a resident in Kuku area for seven years and experienced the chronic floods three times.

*“I temporary shift my children to my relatives and back after the rainy season while am left here. It is not easy because I have reached an age where I should be independent enough to look after my own children but I am unable to do that due to poverty. My relatives have their own responsibilities and I feel like am a burden. Sometimes my property and my children’s books are soaked in water. My children stop going to school because I cannot afford to buy gumboots. The flood water usually reaches my children’s body waist”*. Participant 11

#### **5.3.1.6.2 Sleepless nights**

The victims of floods in Kuku residential area generally have to endure sleepless nights during incidences of floods. Participant 2 who is a Counsellor at Kuku clinic and a tenant in Kuku residential area for three years has experienced flood incidences three (3) times. She narrates her ordeal as;

*“My experience with the chronic floods is always bad, I have sleepless nights because I have to be alert to anything. At times I sleep with flood water in the house”.*

#### **5.3.1.6.3 Fear to relocate**

Participant one (1) who is a 40-year-old woman who has lived in Kuku residential area for 12 years, experienced the floods three (3) times and is a charcoal trader described her fear when she said;

*“I am married and have lived in Kuku for twelve years. I do not want to relocate due to the fear of starting from the scratch in getting to familiarize myself with new customers, what if I don’t find good customers as I have already developed social business networks in Kuku residential area”.*

On the other hand, participant 16 who has experienced the floods four (4) times within the 18 years and has been living in Kuku residential area expressed her fears over the flood situation when she said;

*“We usually experience severe floods here in Kuku residential area. We suffer a lot due to floods in the rainy season to the extent that houses collapse and roofs are blown away such that we don’t even have a place to sleep. I would like to relocate to another residential area but I fear starting my life from the scratch. I am used here and I get along with people in Kuku and I have known the area well enough to survive on my own. I live in Unelectrified one room at 150 monthly rentals. Last month a well-wisher from my church paid two months in advance because I was unable to. If I relocate, where will I find affordable accommodation as low as 150ZMW (9.39USD) and below in an urban area? Who will be paying my rentals and will my social financial networks continue to assist me even when I relocate to another area? If “NO” is the answer to the three questions, then I will not choose to relocate, its better the Government help us (flood victims) with empowerment programs and improve on the drainage system in Kuku area”.*

Participant 5 is 72 years old, married and a plumber narrated that;

*Relocation due to chronic floods experienced in the area is not part of my vocabulary because I have lived for 42 years in Kuku and am a landlord. Relocation will mean that I would no longer be a landlord which helps me and my family of six to earn a living from the rentals. Finding customers for my plumbing services is not easy considering my age.*

Participant 10 is a 60-year-old landlady said that;

*I can't accept to relocate because I went through many challenges to be a Kuku landlady and I would not trade for anything to lose my house I built in my youthful age and strength.*

Further, the drainage system in Kuku residential area are in deplorable state as such chronic floods are inevitable. Figure (5.28) and (5.29) is a depiction of the road at kuku market with stagnated water which is usually and completely flooded during the rainy season.



Figure 5.28: Smelly Stagnant Flooding which are remnants from the 2021/2022 rain season at the T junction within kuku market due to small blocked drainage in June

Source: Field data (2022)



Figure 5.29: Same T junction road with Kuku market in February 2023 rain season.

Source: Field data (2023)

While many residents fear relocation and do not want to relocate, some flood victims are temporary relocated through the Disaster Management and Mitigation Unit (DMMU) when their houses and all their property are submerged in the floods leaving the flood victims with no option. Affected relocated flood victims shared her experience. Participant 4 who is a divorced mother of six and supported through income from rentals related her experience;

*“The DMMU assistance is not enough. I was one of the relocated victims in the 2020/2021 rainy season. We were instructed to find accommodation elsewhere and were told that they would pay for our rentals. When the eight of us found accommodation, we made a follow-up through the phone to inform them about the situation on the ground, however their response was not fulfilling as the initially agreed. They only released money for only the four of us while three of us have not been given the money to pay for the rentals up to this date...I don’t know how the money they promised to give us was used”*. Participant 4

## **5.3.2 Opportunities experienced by flood victims due to the chronic floods in Kuku residential area**

### **5.3.2.1 Informal businesses**

Kuku is a marginalized residential area, most people who live there have low financial status and they depend on cheap or low-cost businesses such as the selling of charcoal that is usually prepacked and sold in small plastic bags at ZMW 5.00 (USD 0.32 as at 7 October 2022). Most of them buy from the nearest market place to their homes as shown in figure (5.30) where a lady selling food stuff within the residential area just outside her plastic makeshift house. Due to the occurrence of frequent floods in the area and the fact that the flood victims need to sustain themselves through their small businesses, most goods and accommodation are/is cheap to attract customers who are usually tenants. By having such conditions, it's an opportunity for residents to save especially where accommodation cost is cheap and affordable. Participant 4 related that;

*I am used doing business in this area hence I fear to relocate to another area because it would be difficult to find customers as shown by figure 5.30.*

Meanwhile participant 12 is a kuku tenant, businessman and he is 48 years, recounted that

*“I sell different types of beans; white, Lusaka, solwezi, mpomba and kabulageti muka bale ‘in small prepacked packets’ at ZMW 5 (0.32 USD as at 7 October, 2022). The money I realise from this business helps me provide for my family and to pay rentals ...it is affordable, clean and pest free and at times I sell on credit. Just like the residential area is informal so is the cost of living. The cost of living here is affordable and bearable as compared to planned flood prone free residential areas”.Participant 12*



Figure 5.30: The first woman sitting from the right is the owner of the plastic makeshift house where she lives with her household and sells wild fruits and onions.

Source: Field data (2022)

### 5.3.2.2 Affordable rentals and proximity to the Central Business District

Kuku residential area as an improved settlement that is among residential areas with the cheapest and affordable rentals. This is one of the reasons why flood victims endure the chronic floods and continue living in Kuku residential area in Lusaka city and is close to the Central Business District. The approximate current monthly rentals stand at ZMW 600 (37.90 United States Dollars as at 11 October 2022) for a two roomed house with electricity as shown in Figure (5.31) and (5.32). This affordability in rentals and close proximity to the CBD means that Kuku residential areas generally has high demand for accommodation especially among those in the informal sector such as maids, security guards and shop assistants and their salaries and wages are not lucrative.



Figure 5.31: Two-roomed electrified house with an elevated veranda to prevent floods into the house at a mean monthly cost of ZMW 600 equivalent to 37.90 United States Dollars as at 11 October 2022.

Source; Field data (2022)



Figure 5.32: A detached two roomed house with an elevated small veranda to prevent floods flowing into the house at 600 ZMW.  
Source: Field data (2023)

Participant 6 relates that most tenants have found affordable rentals in Kuku residential area.

Participant 6 is a married, 37-year-old male tenant who lives with four other people in his home. He has a business of selling poultry and has spent the past 12 years living in Kuku and has experienced four episodes of floods. He cited affordable rentals as a major opportunity he has been experiencing;

*“I have been renting in kuku residential area because it has cheap and affordable rental payments for accommodation. I pay ZMW 350.00 (USD 21.7 US Dollars as of 22 August 2022) for an electrified single room which is affordable for me and other houses are at 150 ZMW (USD9.39)”.*

Participant 6

The figure (5.33) and (5.34) shows an example of the unelectrified one roomed house at 150 ZMW before and during the rainy season and affordable Two-roomed electrified house at a mean monthly cost of ZMW 600 equivalent to

37.90 United States Dollars as at 11 October 2022 in figure (5.35).



Figure 5.33: Affordable One roomed house in Kuku residential area at 150 Zambia kwacha (9.39USD) monthly rental in August 2022  
Source: Field data (2022)



Figure 5.34: Same one roomed house with an improvised raised block entrance during the rainy season of February 2023 to block flood water from flowing into the house.  
Source: Field data (2023)



Figure 5.35: Affordable Two-roomed electrified house at a mean monthly cost of ZMW 600 equivalent to 37.90 United States Dollars as at 11 October 2022 during the rainy season of February 2023

Source: Field data (2023)

### 5.3.5.3. Ownership of Land

There is a general sense of security and sustenance in land ownership among most residents in Zambia. This is also applying to the chronic flood victims of Kuku residential area of whom the majority have objected to be relocated because they own land in Kuku and have built houses for renting out which are their sources of income. For these chronic flood victims, relocating is equated to losing their land, dignity and their source of income. This fear is well cited by Participant 15 who is a 74-year-old woman who has been living in Kuku residential area for 46 years and experienced flood incidences 6 times. As a house owner whose income is generated from monthly rentals, participant 15 had this to say;

*“I am a landlord and I have no other place to relocate to during the floods... I am Zimbabwean and was married to a Zambian who is now my late husband... I am seventy-four years and my*

*right leg was amputated due to diabetes. I have nowhere to go and have not yet gotten a Zambian National Registration card because I have no one to help me get one. If I had gotten a Zambian National Registration Card, I would have been benefiting from social welfare/cash transfer. I depend on the tenants who however during the floods, some relocate and I lose out. Actually, the flood water even floods inside my house but am unable to relocate because am the landlady of the house and have no other means to sustain myself and family. I am currently living with my seven children and grandchildren of whom one is a drunkard and cannot help out the family or even look after me. I suffer a lot when there are floods but I endure it because I have no other option”.*

Participant 15.



Figure 5.36: A 74 year old amputated woman and landlady who suffers during floods as she is carried from one place to another due to difficulty in movement once the area is flooded

Source: Field data (2022)



Figure 5.37: Flooded both the entrance and inside of the 74 year's house during the rain season of 2023 which also shows a reflection by the entrance  
Source: Field data (2023)



Figure 5.38: The 74-year-old amputated woman sitting uncomfortably on the sofa which is supported by blocks to warm herself and the entire house due to the coldness exuded from the floodwater inside her house.

Source: Field data (2023)

#### 5.3.5.4. Accommodates chronic flood victims with Limited options

Most residents claimed to have created a bond with the area due to poverty, so they feel they would have difficulties surviving elsewhere because they probably have no enough finances to start over elsewhere as shown in Figures (5.39) and (5.40) which is evidenced by the appearance of the plastic makeshift house of a landlord. Participant 4 who was born and raised in Kuku area and has lived through repeated floods for 46 years said;

*“I was born here and I have been living in this shaft tent on this land because the land belonged to my parents which is now mine. Unfortunately, my husband left me for another woman because I bore him too many children (6 children) for him to take responsible for. The reason for the*

*separation from my ex-husband was that he cannot manage to look after the said number children. The money I earn from my small business helps me and my children to buy food only and at times, well-wishers come through for us with clothes and food. I have no support from my runaway husband”.*



Figure 5.39: One roomed plastic makeshift house for participant 4 where she lives with her six children is evidence of limited options where two of her children due to limited options

Source: Field data (2022)



Figure 5.40: Participant 4 with some of her children prior to the rainy season

Source: Field data (2022).

The major constraint is chronic poverty that hovers amongst the residents. This determines their location and the period of their residence in the area. To highlight more on this trajectory. Participant 6 argued that cheap rentals was one of the opportunities he has found in Kuku residential area as narrated by Participant 6 in subsection 5.3.5.1 of this chapter.

### **5.3.3 Challenges exacerbated by chronic flood incidences experienced by flood victims in Kuku residential area**

The flood victims of Kuku residential area experience many challenges that come along as a result of the floods. These challenges were expressed as conflicts, thefts and flooded potholes.

#### **5.3.3.1 Social conflicts**

During the rainy season, social conflict among the flood victims is inevitable as neighbors quarrel over the direction in which the flood water should flow as revealed by Participant 7. This arises

because the residents have built houses without drainages for rainy water to flow through. Therefore, when a house is built, it is either preventing water to flow through and leading to a flood or allowing the flood water to flow and form a flood area elsewhere. For example, before the floods in Figure (3.41), (3.42) and during the rainy season figures (5.43) and (5.44), the flood water offloaded from one of the Guest Houses into the neighbors' compounds contributes to the prolonged floods in the area. Usually, this water is said to be also contaminated with human waste and garbage from the surrounding and within the area.

Participant 7 is a 37 year old single male and does piece works, revealed that;

*“I am simply a tenant and I when complain to the guest house owner and to the landlord about the being a victim of the flooded polluted water, I am told off nonchalantly to find another house to rent from or better off to relocate or build my own house”.* Participant 7



Figure 5.41: Entrance to one of the Guest Houses and bottlestore

Source: Field data (2022)



Figure 5.42: The inside one of the guest houses without a drainage

Source: Field data (2022).



Figure 5.43: The gate entrance to the same guest house during the rainy season

Source: Field data (2023)



Figure 5.44: Inside the guest house with no drainage for flood water during the rainy season

Source: Field data (2023)

#### 5.3.3.2 Fear of the thieves locally known as junkies

Theft is common in informal settlements such as Kuku residential area. In recent years, however, these areas have seen a rise in groups of teenagers or young adults who commit theft and thuggery openly and sometimes violently. In Kuku area, these groups of young thugs have been named “*junkies*”. Participant 6 attempted to explain who these “*junkies*” were, when he said;

*“Junkies is the name given to dangerous aimless brutal people usually on drugs and found in informal settlements who rob people or leave them for dead”.*



Figure 5.45: Despite having Kuku police post in the area, there is no security to the residence due to Junkies.

Source: Field data (2022)

Generally, the *junkies* have been and are still terrifying the residents despite having a police post as depicted in figure (5.45). As a result, some children are emulating and foresee this behavior to be normal hence negatively affecting parenting of some residential families. Participant 1 related her fear of experience;

*“I fear to relocate because junkies steal the roofs, doors, electric lines and metal rods. Police too fear the junkies... This year (2021/2022) during the rainy reason, my neighbors’ roofs for her house were stolen because the house was vacant after they temporary relocated due to floods”.* Participant 1.

### 5.3.3.3 Flooded open pits

There are many man-made open pits in Kuku that are used to control the floods. These are usually dug in the ground to prevent or control the floods; however, these have proven unreliable as they are overpowered by floods. The floods therefore continue tormenting the residents making it more dangerous especially to the children. During the dry season, these open pits and shallow drainages are turned into garbage dumpsites for the residents and so when they are flooded, the water is usually contaminated during the rainy season as shown in figure (5.46), (5.47) and (5.50). Participant 11 bitterly lamented her ordeal she experiences during the floods in relation to the open pits;

*“I am forced to stripe my baby on my back the whole day and every day of the floods period because I fear that my child may drown in one of the open pits or may accidently fall in the flooded open pit with sharp objects such as scrap metals and broken glasses which may hurt my baby’s body”.*



Figure 5.46: Man-made open pits to drain the flood water and tap water in Kuku residential area prior to the rain season.

Source: Field data (2022)



Figure 5.47: Same Man-made open pit in shown from figure (5.46) becomes invisible during the rainy season hence futile as it cannot control the floods

Source: Field data (2023)



Figure 5.48: Communal tap flooded

Source: Field data (2023)



Figure 5.49: Blocked shallow drainage turned into a dumping site along kuku road prior the rain season

Source: Field data (2022)



Figure 5.50: A swallow drainage along the road filled with garbage and stagnant water in Kuku residential area before the rainy season

Source: Field data (2022)

#### **5.3.4 Copying strategies used by the chronic flood victims used to adapt and manage the chronic floods in Kuku residential area**

The chronic flood victims have developed a number of mechanism of adjusting to trauma in the midst of poverty by coming up with copying strategies. These copying strategies include; filling sacks with sand, use of buckets by placing them at the front door entrance to tap rainwater thus in order to prevent floodwater from flowing through into their houses, use of vertical elongated black plastic strategically is covered over the wooden door up to the outside entrance to allow rainwater pour on it and guide the runoff rainwater directly outside without flowing into the house, young school children wade barefoot as to protect their school shoes from getting soiled, others use chitenge material to cover the broken doors which blocks the splashed flood water from flowing into the house through the holes of the door while others use the buckets to tap direct rainwater to be used for washing and bathing and in some cases young and old marketeers engage themselves as mobile sellers and deliverers of food to the flood victims' homes where they are unable to buy from the market due to the flooding; some flood victims use buckets to collect droplets of rainwater in houses with a porous roof thus done to prevent flooding in the house. Other chronic flood victims carefully wade through the contaminate floods with a help of supporting stick where the walking stick aids them to avoid the potholes along the way. Last but not the least, flood victims maneuver through the strong current of floods while positioning themselves to the wall of a house for support and to avoid drowning in the flooded open pits. Other flood victims buy and pour sand on low lying area to raise the altitude and prevent stagnation of the flood water, while others build elevated foundation of pit latrines, dig potholes or trenches, use rock barriers and temporal relocation. Despite the mentioned practiced mitigative measures used, they are unsustainable. They are used because that is what they can afford within their capacity to endure the floods. The footage from figures (5.51) to (5.60) captures the alluded to copying strategies used by the victims to adapt and manage floods in the residential area.



Figure 5.51: New filled sacks with sand aligned at the gate entrance to block flood water from flowing into the yard of one of the participants

Source: Field data (2023)



Figure 5.52: Flood victims strategically place buckets at the front door entrance to tap rainwater thus in order to prevent floodwater from flowing through into their houses before flooding occurs.

Source: Field data (2023)



(5.53)

Figure 5.53: Vertically elongated black plastic strategically is over the outside wooden door to allow rainwater pour on it and flow directly outside without flowing into the house  
Source: Field data (2023)



(5.54)

Figure 5.54: Young school children wade barefoot in the contaminated flood water because; their guardians are unable to buy them gumboots and they also need to protect their school shoes from getting soiled  
Source: Field data (2023)



Figure 5.55: The damaged door is covered with a chitenge material to prevent the splashing of flood water from flowing into the house where as the black bucket is intentionally placed on top of a bucket to prevent the splashing of contaminated rain water into the bucket because the water collected is used for washing, drinking and bathing

Source: Field data (2023)



Figure 5.56: A teenage girl is a mobile seller and deliverer of food stuff to the flood victims' homes due to the flooded pathways to the market.  
Source: Field data (2023)



Figure 5.57: Buckets are alternatively used in the house with a porous roof by collecting rainwater and prevent flooding in the house

Source: Field data (2023)



Figure 5.58: A lame flood victim carefully wades through the contaminated floods with a help of his supporting stick where the walking stick aids him to avoid the potholes along the way.  
Source: Field data (2023)



Figure 5.59: Flood victim wades through the strong current of floods while positioning themselves closer to the wall of the house for support and balance in order to avoid drowning in the flooded open pits  
Source: Field data (2023)



Figure 5.60: Flood victim wades through the strong current of floods while positioning themselves closer to the wall of the house for support and balance in order to avoid drowning in the flooded open pits.

(5.60)

Source: Field data (2023)

## **CHAPTER SIX: DISCUSSION OF FINDINGS**

### **6.1 Introduction**

This chapter discusses the findings and the lessons drawn from the findings captured from the chronic flood victims in Kuku residential area.

### **6.2 Effects of the chronic floods on Kuku residents**

#### **6.2.1 Loss of livelihood, loss of welfare, temporal relocation and deterioration of the environment**

Loss of livelihood, loss of welfare, temporal relocation and deterioration of the environment are the effects experienced by the flood victims. The study revealed that the floods hinder the flood victims' small-scale businesses because consumers opt to buy from the nearest available sales outlet. This slows down businesses and negatively affects the flood victims through loss of profits from their livelihood. For example, perishable food such as rape, tomatoes and vegetables rot if not refrigerated. This is usually the case as most flood victims don't own refrigerators. In addition, landlords in flood-prone areas lose out on income from the rentals as flood victims are forced to relocate to houses without floods. The claim of loss of livelihood is no mere overstated as it has already been observed by earlier works of Milazzo (2021) and FRACTAL (2022) that such livelihoods are disrupted due to floods in the area. The study also noted that there was loss of welfare, temporal relocation and deterioration of the environment which disadvantages the flood victims wellbeing as recounted by participant 9,4 and 15 respectively. The deterioration of the environment has been noted by studies done by Nchito (2007),Siachoono (2013) and Siame (2020). This study noted that the severe floods experienced by residents instilled general fear to relocation which is an indication suggesting that the possibility of relocation generally makes residents unease. However, the studies carried out by Matthews *et al.*, (2019) concluded that victims who were directly affected by the floods had higher rates of suicidal ideation as opposed to this study, where no such findings were generated from the flood victims from Kuku residential area. This study also noted that the flood victims fear to relocate therefore endure floods in order to sustainably survive within their socio economic capacity.

While the study recorded that there is loss of livelihood, loss of welfare, temporal relocation and deterioration of the environment, some flood victims simultaneously experience Physical and emotional trauma experiencing form of sores, sleepless nights, fear to relocate and uncomfortability. Feelings experienced as described by the participants were that of painful, tormenting and uncomfortable. These include sores, sleepless nights and fear to relocate. The two participants (Participant 1 and 11) through their lived body have both highlighted the flood experiences and their emotional experience thus their feeling towards floods which is one of the four Lifeworld Existentials. Thus, the lived body for the researcher to understand and induce the substantial information to understand the experiences from a lived body. This studies also noted that weather conditions no longer influence the residents to live in an area but the socio economic capacity did because living independently to the flood victims is more respectful and valuable than depending on others for support. This study also reported Post Trauma Stress Disorder inform of “sleepless night”, “fear to relocate” and “uncomfortability” as part of their emotional experience however trauma stress disorder is also experienced during the flood period. Despite trauma experienced by the flood victims in Kuku residential area it has not influenced the victims to permanently relocate to other residential areas.

### **6.3 Opportunities created by chronic floods in Kuku residential area**

#### **6.3.1 Informal businesses, Nearness to the Central Business Centre and cheap rentals and affordable rentals, accommodate chronic flood victims with limited options and ownership of land and houses.**

By the virtual of this study area being prone to chronic flooding, Informal businesses, proximate to the central Business Centre and cheap rentals are substantive opportunities that the residents are experiencing as a benefit from the residential area. On the other hand, these socioeconomic activities succumb to floods. Despite this, the flood victims are willing more than ever to adapt to the copying flood strategies mentioned under sub section 5.3.4 as figures 5.43 to 5.52 shows evidence of resilience among the flood victims. In as much as there is loss of livelihood and at times, they experience slow business, the little income they get helps them to sustain and afford rentals for shelter which is one of the basic needs a human being. In view of the same, landlords willing reduce rental amounts inorder to avoid entirely losing income from rentals therefore they

would rather reduce the rental amount than gaining nothing at all especially during the floods in the rain season.

The prevalence of the area to accommodate flood victims with limited options, cheap accommodation and ownership of houses and land experienced among the residents in Kuku residential has been a pull factor to the said residential area. In addition, the duration of how long one has been a Kuku resident influence their decisions. This studies revealed that the longer one lived in Kuku residential area, the higher the chances of him or her not to relocate to another residential area provided that they have limited options, for example participant 4. Therefore, chronic poverty is a means through which the residents in Kuku residential area have become perpetual chronic flood victims.

#### **6.4 Challenges exacerbated by flood incidences in Kuku residential area**

##### **6.4.1 Social conflicts, fear of junkies**

Social conflicts, fear of thieves locally known as *junkies* and flooded open pits are typically cascading drawbacks fueled by flooding in this area experienced by the flood victims. The chronic flooding has created a fertile environment for an increase in the number of *junkies*. This study noted that they thrive and disturb the harmony of the flood victims despite having a police station for security purposes as recollected by participant 1. While Hamza (2019) contents that conflicts arose amongst the flood victims in Nigeria as a result of being made fun based on flooding circumstances, which would actually result in conflicts. However, in Kuku residential area, social conflicts emanated as a result of residents building structures and diverting the flood water from one compound to the surrounding households which don't have any proper drainage to contain the floods. This study reported that flood victims experienced no peace but fear of *junkies* unlike the studies in the literature review which indicated that their flood victims had no such experience.

#### **6.5 Copying strategies**

The copying strategies to adapt to the residential area are temporally used to alleviate flooding, however there are some that are sustainable which include; building of toilets, houses and shops at a vertical higher elevation or with an elevated verandah or with an elevated entrant to block the

flood flow as shown in figures (5.21), (5.24), (5.32) and (5.56). Despite some copying strategies not sustainable, they have used in such a way they are replaced every rainy season as preparation for flood mitigation once the filled in sand bags can no longer serve its purpose, they get new bags and fill them with sand to manage the floods for example figure 5.50 as a copying strategy.

## **6.6 Lessons drawn from the lived experiences of the chronic flood victims**

The study reported that the period of lived experiences of flood victims in Kuku residential revealed lessons and these are;

### **6.6.1 Flood victims are traumatized during and after chronic floods in Kuku residential area**

While Physical and emotional trauma experienced form of sores, sleepless nights, fear to relocate and uncomfortability by the chronic flood victims, the relocated flood victims are mostly helpless to an extent of going back to the same area and enduring their stay because they don't have other means of earning more finances to allow them to live in areas with better conditions. Temporal relocations usually involve loss of livelihoods therefore residents return to the flood prone areas in order to have a livelihood and generate income for their households. This further increases their vulnerability and they end up living in chronic flood traumatization during and after the floods due to reduced livelihood options as shown in figure (5.61). Hence, limited options expedite the problems faced by the flood victims as they cannot afford housing in better residential areas such as in high cost areas.



Figure 6.61: Market Stalls are abandoned due to the fear of floods  
Source: Field data (2023)

### **6.5.2 Some flood victims have defied against all odds by adapting to the area which is an indication of resilience among the chronic flood victims.**

Chronic poverty or no drainage systems has been drawn from this study as one of the contributing factors that render flood victims helpless. Some flood victims however, have defied against all odds by adapting to the area as indicated by Participant 3 and 4. This indicates resilience by the chronic flood victims in order to survive in an urban improved flood prone area. The study notes that that from the participants' verbatim, that they are not ready to relocate instead such areas should be given more attention in terms of equity development by anti-flood projects implementers in order to improve their wellbeing. This is because their financial capabilities are determining the location where they can be self-sustained. On the other hand, 1 out of 16 participants was willing to relocate narrated by participant 2.

Participant 2 is a 28 years old tenant, married and a grade 12 school leaver. She and her household size of 3 have been Kuku residents for three years in which she has experienced three times annual floods. She said:

*“I am 28 years old and have experienced the floods in Kuku residential area 3 times, given an opportunity to relocate, I would not because of floods but because am a tenant and still young however I do not have a lucrative sustainable livelihood to live in flood free areas which usually have a higher amount of rentals as compared to residential areas low cost residential areas in an urban area”.* Participant 2

Life during and after floods leaves the victims in Kuku residential area with no peace of mind as they have to endure annual episodes of flooding as long as they continue to be residents in the flood prone residential area. This is evidenced with the number of times the victims have experienced floods but they still opt to continue staying in Kuku residential area. In the long run, they have developed coping strategies to help them adapt to the conditions in the area. They have also gotten used to the conditions of the area thus it has become part of their culture. Despite the chronic floods in Kuku residential area, the flood victims are against the permanent relocation due to the Central Business District location, source of cheap labour, affordable accommodation rates and limited options. One of the major lessons being raised from the lived experiences of flood victims is their resilience. The flood victims have learnt to live with the chronic floods despite some unsustainable coping strategies. The coping strategies have given them hope to temporarily manage the floods within their independent socioeconomic capacity. The other lesson exposed by this study is that the flood victims would rather reside in flood prone areas than flood free residential area because they are able to afford their cost of living within tenacity of their income. This is because high-cost urban residential areas are expensive thereby excluding those in poverty and would not want to be a burden of chronic debt to others due to living a lifestyle they cannot afford as recounted by Participant 14.

Participant 3 is a landlord aged 42 years old and divorced. He was born and raised in Kuku residential area. Apart from being a landlord to one of the houses in Kuku residential area, he does piece works to increase his income. He had this to say;

*“My parents gave birth to me while they were living in Kuku residential area. I was born here and still living in Kuku residential area for 42 years and I am a landlord. I have experienced the chronic floods 5 times. I don't have credentials that would help me get a sustainable formal job for me to consider living in high cost accommodation usually found in non-flood prone areas. I have accepted to be a resident and perpetual flood victim in Kuku area”. Participant 3*

Participant 4 is divorced and a landlord. She and her family of 6 are supported through the money collected from the small businesses. Her highest level of education is grade 9 and she was born and raised in the Kuku residential area. In terms of the period of living in Kuku prone flood area, she said:

*“I was born and raised in Kuku residential area. I am 46 years old of age and I have experienced 6 annual episodes of floods. My poor family leaves here. Whenever they are floods, we don't have an alternative accommodation because it's a family plot. Hence, I have continued to maintain a plastic makeshift house inherited from my late parents. We don't intend to relocate because we have been surviving the flood every time it hit us, if I and my family have survived 6 annual episodes of floods, what can stop us from surviving another annual episode of a flood when we are now actually used to it”. Participant 4*

Participant 14 is a land lady and experienced the flooding for about 6 times, she is 52 years old and has been a kuku resident for 31 years. She recalled that;

*“I am grown woman with a family and house of my own. I would not accept to relocate all because floods. I will feel ashamed and have no freedom to reside in a location beyond my financial means. Relocating will mean that I will lose my house and tenants because it will be demolished. The age I have reached cannot allow me to be looked after by family members. I Would rather live in a flood prone area and survive within my financial means than become a depressed woman and mother due to a financial constraint, when affordable flood prone residential exist. I have inner peace despite the challenges I experience that come with the negative impacts of floods. There was one time I had relocated to a non-prone flood area however it was short lived because I could not afford to pay rental hence, I relocated back to Kuku residential area”. Participant 14*

As one of the chronic flood victims recounted that her age cannot allow to be depending on others for her cost of living therefore only relocates some of her children to live with family members which she still finds it irresponsible. Therefore, the age in shown in Table 1, has influence to the resilient chronic flood victims, for example participant 11 and 14, the older one was, the more difficult it is to be looked after by others. There is also resilience exuded by the chronic flood victims, as reported by this study that despite the challenges experienced by the chronic flood victims, the opportunities have given them hope in their lifeworld and survival by accepting floods as a result they use different coping strategies to manage the chronic floods as shown in figures (5.51) to (5.60).

## **CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS**

### **7.1 Introduction**

This chapter contains the conclusion and recommendations based on this study that have been derived from chapter five.

The study noted that the lived experiences of the chronic flood victims have been severe and that temporary relocation through DMMU has been a short term solution to the homeless flood victims. Some Kuku residents have become perpetual flood victims because the income earned from their unstable socioeconomic activities is a determinant of their residential location. The flood victims experienced both emotionally and physically traumatized therefore material and financial support through inclusive holistic empowerment and environmental education programs to curb perpetual poverty and change their mindset should be implemented as a prerequisite requirement. The study further notes that areas prone to flooding are a home to many poor with limited options in urban residential areas therefore there is need for sustainable drainages for every built environment. Consequently, they will be a ripple effect on all the residents in kuku residential area thereby actualizing some of the Universal Sustainable and Ecofriendly environmental goals. The Meaning and lesson from raw lived experiences of flood victims exudes resilience to manage and adapt to chronic floods in residential area. Being a resilient chronic urban flood victim reflect the tenacity of one's socio economic capacity. The socioeconomic age may determine ones' residence in urban areas and that weather vulnerability may not influence human settlements in urban low cost residential areas due to population increase, opportunities availed to them and their socio economic status. Being a resilient self sustained chronic flood victim at their age was better than being financially dependent on others for their cost of living as recounted by the Participant's reasoning to why they continue to be Kuku residents despite the area being susceptible to chronic floods.

### **7.2 Conclusion**

This study has captured the lived experiences of flood victims in Kuku residential area. The study noted that the lived experiences of the chronic flood victims have been severe and that temporary relocation has been short term solution to the homeless flood victims through the DMMU. Despite the challenges that torment the perpetual flood victims, they still continue to reside in the

residential area because the income earned from their unstable socioeconomic activities is a determinant of their residential location. Several factors catalyzing chronic floods were exposed, such as poor engineering work in the drainage system as boldly noted from the shallow and narrow drainages which cannot contain the flood waters and a lack of drainage filter were adding to the constant clogging of drainages. To this effect, the study participants suggested several sustainable options for managing flood-related challenges such as personal hygiene, Construction of a recycling sale centre for nonbiodegradable domestic garbage, provision of mobile dumpster, Construction of decomposed /organic manure sale Centre, environmental education, Inclusive Area improvement and sensitization programs, more sensitization on dangers of living in a flood plain area, Provision of garbage collection services by the local authority, encouraging landlords to build flushable toilets for their homes, engaging qualified engineers to work on the construction of deeper and narrow drainages with filters and the construction of flushable toilets with septic tanks in markets. It was also noted that flood victims were usually traumatized therefore material and financial support through inclusive holistic empowerment and environmental education programs to curb poverty and change their mindset should be a prerequisite requirement. The study further notes that areas prone to flooding are a home to many poor with limited options in urban residential areas therefore there is need for sustainable drainages for every built environment. Consequently, they will be a ripple effect on all the residents in kuku residential area thereby actualizing some of the Universal Sustainable and Ecofriendly environment goals if such are implemented. The Meaning and lesson from raw lived experiences of flood victims exudes resilience to manage and adapt to chronic floods in residential area. Being a resilient chronic urban flood victim reflect the tenacity of one's socioeconomic capacity. The socioeconomic active age may determine ones' residence in urban areas and that weather vulnerability may not influence human settlements in urban low cost residential areas due to population increase, opportunities availed to them and their socio economic status. Being a resilient self sustained chronic flood victim at their age was better than being financially dependent on others for their cost of living as recounted by the Participant's reasoning to why they continue to be Kuku residents despite the area being susceptible to chronic floods.

## **7.3 Recommendations**

The study has established the following:

### **7.3.1 Sustainable eco-friendly practices for combating floods in Kuku residential area**

The following measures were suggested by the chronic flood victims in Kuku residential areas as ways of combating the floods. All the suggested mitigation measure should be embraced and implemented if alleviation of flooding has to be achieved. Flooding occurs in the environment which is part of the ecosystem. In this regard, it is interlinked and therefore any man made driver that contributes to floods should be managed if not avoided.

#### **7.3.1.1 Short term eco-friendly mitigation measures**

##### **7.3.1.1.1 Advocating for Hygiene campaigns both at individual and public levels**

The Participants suggested that they had a role to play in maintenance of the environment. For example, regular self-cleanliness for themselves and their work station, all marketers' stalls and residential homes cannot be over emphasized. All the 16 participants suggested that every resident in the area should be exemplary if positive change was to be seen. Suggestions on personal hygiene entailed that all traders should be cleaning their stalls at the market and within the community and dispose of their garbage at the garbage site.

##### **7.3.1.1.2 Construction of a recycling sale centre for non-biodegradable domestic garbage within Kuku residential area.**

This initiative involves the construction of a recycling sale centre within Kuku residential area for non-biodegradable materials for easy transportation from the residents. It will be a centre where residents in Kuku residential area will take their non biodegradable garbage from their household including that from the streets of Kuku area for resale. To this effect, they will be separation of various types of garbage at household level. The materials to be sold at the recycle sale centre will include plastics and scrap metals. The centre will be the rendezvous centre for the sellers and buyers. This measure will also be a source of income to the residents. Recycling supplies raw

materials for making new products and keeps garbage out of landfills and incinerators. By doing this, these resources are preserved and used for as long as feasible.

#### **7.3.1.1.3 Provision of large metallic Mobile dumpster**

Kuku residential area is susceptible to floods, therefore having two or more large metallic mobile dumpsters within the area would help in disposing off their non-organic domestic garbage during the rainy season. The container would be used by the Kuku residents to disposal off their bio degradable garbage from their homes. Once the container is saturated, Lusaka city council will have to empty it at the designated dumpsite in order to create room for more garbage from the residential area.

#### **7.3.1.1.4 Construction of decomposed /organic manure sale centre**

The centre will be a selling point for decomposed manure from each household. With the primary source being the Kuku residents. Each household will have to dig up a narrow rubbish pit taking into consideration the limited household surrounding space. Once the rubbish pit is saturated with the biodegradable garbage, it can be covered by soil for it to decompose. Once it is decomposed, the residents can sale at the organic manure centre where companies and individuals can buy from and use it in their gardens.

#### **7.3.1.1.5 Environmental Education**

Environmental education (EE) is "a process that allows people to explore environmental concerns, participate in concern, and take measures to improve the environment (Pettersson, 2022:3). For any economic activity to flourish in the community, a healthy environment is necessary. As indicated by table 1 and outlined under sub section 5.2.2 that very few chronic flood participants have attained secondary education or later on tertiary education therefore Environmental Education will help the residents and flood victims of Kuku residential area acquire the skills required to learn about their surrounding and direct them in reaching wise, well-informed decisions about how they may support environmental preservation. For instance, their mindset will focus on resolving local environmental and social issues notably the flooding problem and the effects it has on the victims which is also in line with the symbolic interaction framework in chapter two.

#### **7.3.1.1.6 Inclusive Area improvement and sensitization programs**

There is an urgent need for mindset change among Kuku residents through the improvement of the area and sensitization programs on the dangers of indiscriminate handling of garbage as well as the benefits of a clean environment. If only the area can be enhanced with adequate and proper reliable drainage system, sensitization and involvement of the residents in keeping the environment clean, their mindset would positively respond to the environment and there would be sanity in the area.

#### **7.3.1.1.7 Provision of garbage collection services by the local authority.**

The poor drainage system in Kuku residential area has exacerbated the flooding in the area. Therefore, the government through the Lusaka City Council and Disaster Management and Mitigation Unit should provide mitigating services such as the construction of proper drainages which will prevent floods in the area and garbage collection services to prevent clogging of drainages. This initiative will simultaneously keep the environment clean and alleviate some waterborne diseases that are as a result of the adverse impacts of flooding. Hence, clean environment means a healthy environment for the residents. Thereby having the input from both the residents and the Local city council would not only help in alleviating chronic floods but would be sustainable to the residential area for the future generation to come.

#### **7.3.1.2 Long term eco-friendly mitigation measures**

##### **7.3.1.2.1 Engage proper engineers**

By engaging properly trained engineers to work on structural constraints in Kuku residential area such as drainage enhancement. This measure will alleviate the impacts of flooding on the residents.

In view of the flood victims' suggestion, they pointed out that having engineers on sight to enhance the drainages and establishing more drainages where there is a need would be of great value because they are equipped with the expertise knowhow knowledge in this field. Since one of the contributing factors of flooding in Kuku residential area are unstable drainages. To this effect, working on the best methods of improving drainages in Kuku would help reduce on the current floods in the area. Hence, the Government through the Ministry of Finance should allocate a

substantial financial budget to help in the implementation of sustainable flood management projects that will alleviate flooding.

#### **7.3.1.2.2 Increase drainage systems**

Fixing the drainages by narrowing and increase their depth along Katambala Road and kuku road (lime road) may significantly increase the flow of runoff water and reduce on the flooding in the area. One of the causes of the flooding in the area was a lack of drainages in some parts of Kuku, but even where drainages existed, they were too small to accommodate the flooding. Increasing the drainage size and covering them with appropriate pavers to prevent garbage from entering the drainages would significantly reduce on the area flooding. Further ground surface elevation where appropriate would also reduce on flooding.

#### **7.3.1.2.3 Advocate and implement the construction of flushable toilets with septic tanks**

Due to the chronic floods in the residential area, implementation of septic tank construction by landlord and landlady would be ideal. This will reduce water pollution and water borne diseases which is as a result of the overflowing human wastes from the pit latrines due to floods. To this effect, policy makers and spatial planners should advocate for such initiatives.

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## APPENDICES

### Appendix one: Interview Guide-Participant

Dear Participant,

My name is Catherine Whitniss Bulambo. I am a student at the University of Zambia reading a Master of Science in Human Geography student. I'm currently carrying out research study titled “Copying strategies to chronic floods in kuku residential area in Lusaka District, Zambia: A Hermeneutic Phenomenology study”. After an exhaustive interview, you were chosen for this study and your assistance will be greatly appreciated. Your personal information will be kept confidential and used exclusively for academic purposes. Your participation in this research interview is completely voluntary and your opinions are greatly valued.

#### SECTION A.

##### A: PERSONAL INFORMATION

1. Gender: Male ☐ Female ☐
2. Age  
.....
3. Highest educational level attained: .....
4. Occupation: .....
5. Household size.....
6. Period of stay in this area.....
7. How many times have you experienced floods in the area?.....
8. Landlord ☐ Tenant ☐
9. Marital status. Married ☐ Single ☐ Divorced ☐ Widowed ☐

#### SECTION B: Lived experiences of chronic floods

##### Tell your story

10. What effects of chronic floods have you been experienced a flood victim in Kuku residential area?
11. What challenges have you been experiencing due to chronic flood in Kuku residential area?

12. What opportunities have you been experiencing from the chronic flood in Kuku residential area?
13. What sustainable coping strategies have you been using to adapt to the chronic floods in Kuku residential area?
14. Despite experiencing the chronic floods in Kuku residential area, why do you continue living in this residential area?
15. What strategies do you feel/think should be put in place in Kuku residential area and why?

**Thank for your responses.**

## Appendix two: Approval of Study Letter



### THE UNIVERSITY OF ZAMBIA DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road Campus | P.O. Box 32379 | Lusaka 10101 | Tel: +260-290 258/291 777  
Fax: (+260) 211 290 258/253 952 | Email: director.drgrs@unza.zm | Website: www.unza.zm /directorates/drgrs

#### APPROVAL OF STUDY

**IORG No. 0005376**  
**NASREC IRB No. 00006465**  
**REF NO. NASREC-2024-JAN-004**

25<sup>th</sup> January, 2024

Ms Catherine Whitess Bulambo  
The University of Zambia  
P.O. Box 32379  
Lusaka

Dear Ms. Bulambo

**RE: "MANINGING CHRONIC FLOODS IN KUKU RESIDENTIAL AREA IN LUSAKA: A HERMENETUTIC PHENOMENOLOGY STUDY."**

Reference is made to your protocol dated as captioned above. NASREC resolved to approve this study and your participation as Principal Investigator for a period of one year.

Review Type	Ordinary Review	Approval No. NASREC-2024-JAN-004
Approval and Expiry Date	Approval Date: 25 <sup>th</sup> January, 2024	Expiry Date: 24 <sup>th</sup> January, 2025
Protocol Version and Date	Version - Nil.	24 <sup>th</sup> January, 2025
Information Sheet, Consent Forms and Dates	• English.	To be provided
Consent form ID and Date	Version - Nil	To be provided
Recruitment Materials	Nil	Nil
Other Study Documents	Questionnaire.	

Specific conditions will apply to this approval. As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study sponsors and other regulatory authorities will be informed.

*Towards Improving Service and Excellence in High Education Beyond Fifty Years*

### Conditions of Approval

- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to NASREC within 5 days.
- All protocol modifications must be approved by NASREC prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to NASREC within 5 working days.
- All recruitment materials must be approved by NASREC prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. NASREC will only approve a study for a period of 12 months.
- It is the responsibility of the PI to renew his/her ethics approval through a renewal application to NASREC.
- Where the PI desires to extend the study after expiry of the study period, documents for study extension must be received by NASREC at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Documents received within 30 days after expiry will be labelled "late submissions" and will incur a penalty fee of K500.00. No study shall be renewed whose documents are submitted for renewal 30 days after expiry of the certificate.
- Every 6 (six) months a progress report form supplied by The University of Zambia Natural and Applied Sciences Research Ethics Committee as an IRB must be filled in and submitted to us. There is a penalty of K500.00 for failure to submit the report.
- When closing a project, the PI is responsible for notifying, in writing or using the Research Ethics and Management Online (REMO), both NASREC.
- and the National Health Research Authority (NHRA) when ethics certification is no longer required for a project.
- In order to close an approved study, a Closing Report must be submitted in writing or through the REMO system. A Closing Report should be filed when data collection has ended and the study team will no longer be using human participants or animals or secondary data or have any direct or indirect contact with the research participants or animals for the study.
- Filing a closing report (rather than just letting your approval lapse) is important as it assists NASREC in efficiently tracking and reporting on projects. Note that some funding agencies and sponsors require a notice of closure from the IRB which had approved the study and can only be generated after the Closing Report has been filed.
- A reprint of this letter shall be done at a fee.
- All protocol modifications must be approved by NASREC by way of an application for an amendment prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address or methodology and methods. Many modifications entail minimal risk adjustments to a

protocol and/or consent form and can be made on an Expedited basis (via the IRB Chair). Some examples are: format changes, correcting spelling errors, adding key personnel, minor changes to questionnaires, recruiting and changes, and so forth. Other, more substantive changes, especially those that may alter the risk-benefit ratio, may require Full Board review. In all cases, except where noted above regarding subject safety, any changes to any protocol document or procedure must first be approved by NASREC before they can be implemented.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

On behalf of NASREC, we would like to wish you all the success as you carry out your study.

Yours faithfully,



**Dr. E. M. Mwanauwa**

**CHAIRPERSON  
THE UNIVERSITY OF ZAMBIA NATURAL AND APPLIED SCIENCES RESEARCH  
ETHICS COMMITTEE - IRB**

cc:     Director, Directorate of Research and Graduate Studies  
         Assistant Director (Research), Directorate of Research and Graduate Studies  
         Assistant Registrar (Research), Directorate of Research and Graduate Studies