

**CHILDREN'S PERSPECTIVES ON DISASTER RISK REDUCTION AND  
ADAPTATION: THE CASE OF FLOODS IN MAMELODI EAST**

**BY**

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## ABSTRACT

### CHILDREN'S PERSPECTIVES ON DISASTER RISK REDUCTION AND ADAPTATION: THE CASE OF FLOODS IN MAMELODI EAST

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The increase in natural disasters incidents affects everyone. Children are among the most vulnerable populations severely affected by floods. The goal of the study was to determine the perspectives of children on disaster risk reduction (DRR) and adaptation to floods in Mamelodi East.

The study adopted a qualitative research approach and the research paradigm was constructivism. It was an applied study which utilised an exploratory case study research design. A purposive sampling method was used to select three participants between the ages of 8 and 12 years from Viva Independent School based in Mamelodi East. Data collection was done through photo-voice and one-on-one semi-structured interviews which were guided by an interview schedule. Data was analysed through the thematic analysis method. Ethical principles considered for the study included informed consent and assent together with voluntary participation as the parents/guardians of participants provided approval for their children to participate in the research and children provided assent to voluntarily take part in the study.

The findings of the study show that the participants have a comprehension of what contributes to floods in their community such as poor waste management, poorly built houses and pollution (air, land, and water). Furthermore, findings reveal several effects of floods including diseases and death, displacement and relocation, possible emotional trauma, increased crime risks and transport challenges, and several strategies for mitigation of floods. The study concludes that pollution is the main

contributor to floods in Mamelodi East and can be mitigated as it is due to human activity. In addition, mitigation of floods requires finances which have to be both the efforts of the community, including children, and the government. To stimulate child participation in DRR and mitigation, the study recommends the inclusion of DRR in children's education and training, involvement of parents and guardians in DRR, raising community awareness on pollution and floods, improved government service delivery and maintenance of DRR stakeholder relationships.

### **Key concepts**

- Children
- Children's perspectives
- Child participation
- Disaster risk reduction
- Climate change adaptation
- Mamelodi East
- Viva Foundation South Africa

## ABBREVIATIONS

<b>DMA</b>	Disaster Management Act
<b>DRR</b>	Disaster risk reduction
<b>IFRC</b>	International Federation of Red Cross and Red Crescent Societies
<b>ISCA</b>	International Save the Children Alliance
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>NCPF</b>	National Child Participation Framework
<b>RSA</b>	Republic of South Africa
<b>SDGs</b>	Sustainable Development Goals
<b>UN</b>	United Nations
<b>UNCRC</b>	United Nations Convention on the Rights of the Child
<b>UNDRR</b>	United Nations Office for Disaster Risk Reduction
<b>UNICEF</b>	United Nations Children's Fund
<b>UNFCCC</b>	United Nations Climate Change Conference
<b>WHO</b>	World Health Organization

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# CHAPTER ONE: GENERAL INTRODUCTION OF THE STUDY<sup>1</sup>

## 1.1 Introduction

The increasing occurrence of natural disasters such as floods, droughts, mudslides, water scarcity and vector-borne diseases are linked to changing climate conditions (International Save the Children Alliance [ISCA], 2008:5). South Africa is no exception to the effects of climate change as shown by the recent floods in the provinces of Kwa-Zulu Natal (Ngcamu, 2022:58) and Gauteng, where Mamelodi Township is located. The families who live on the riverbanks of the Pienaars River in Mamelodi have been affected by flooding since 2019 (Mabona, 2022; Mahlokwane, 2023; Mothiba, 2022). Although some progress has been made to relocate families to safer environments, the affected community members accuse the City of Tshwane of making empty promises to relocate families to safer spaces before the next flood strikes (Mabona, 2022; Mahlokwane, 2023; Mothiba, 2022). Developing countries such as South Africa are more vulnerable to climate change effects as they lack the necessary resources to adapt to climate change (Alston, 2015:356).

There is an indivisible link between climate change and poverty (Save the Children, 2015:5). People who are poor and marginalised live in disaster risk areas and are disproportionately more affected as they are “the least able to withstand, cope, respond and recover in the long term” (United Nations International Children’s Emergency Fund [UNICEF], 2016:2). Children are among the most severely affected by natural disasters (ISCA, 2008:5). The risks range from death and injuries to diseases related to malnutrition, poor water and sanitation as well as psychological trauma and its harmful effects; if they come from poor households, they are often

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<sup>1</sup> The study formed part of a group research topic which was investigated by the 2022 MSW Social Development & Policy coursework programme. The general introduction of the study, the problem statement and rationale of the study, the goal and objectives, the research questions and sub-questions were similarly described by the eight researchers. Each student conducted an independent study.

further exposed to abuse, exploitation, trafficking and disruptive education (UNICEF, 2016:2). While children are the least to be blamed for climate change, they must live with its impact, which pose a challenge to their human rights and futures (Save the Children, 2015:5). As stated by Butcher, Seballos and Whitehead (2010: vii), “The impact of climate change lays a heavy burden on the shoulders of today’s children; it affects their lives today, and it will transform their lives as adults”.

Children have the right to participate in decision-making “on issues that affect them now and shape their future” of which climate change is one such issue (Save the Children, 2015:7). Furthermore, they have the right to opportunities to present their views on DRR and climate change adaptation (ISCA, 2008:5). The National Child Participation Framework (NCPF) highlights that it is important to involve children in matters affecting them because participation enhances their skills, knowledge and confidence improving their development (RSA, 2018:11). Children’s involvement in climate change issues is aligned with the pillars of the United Nations Convention of the Rights of the Child (UNCRC), that is protection, survival, development, and participation (ISCA, 2008:5). Children’s right to participate means that their vulnerability to be protected is recognised while also focusing on developing their capacity to access child-friendly information and resources and to engage in decision-making platforms where they feel safe (Save the Children, 2015:7). The active involvement of children offers them information and awareness into their lives that can guide legislature, programmes, financial plans, and services resulting in promoting children’s rights in education, health and family life (RSA, 2018:11).

When children participate, they want to know that their ideas are heard and that their needs and capacities are included in planning and implementing interventions at all levels to influence decisions and change (Save the Children, 2015:7). Children’s awareness, involvement and empowerment are equally important for them to be successful agents of change in their communities and to adopt appropriate approaches to address DRR (ISCA, 2008:5). For meaningful participation in DRR and climate change adaptation activities, children should have access to knowledge, have a voice, and engage in action. For this purpose, DRR approaches should be child-focused and child-led. Child-centred or child-focused DRR interventions mean that children’s needs should be included in the design and implementation of all

interventions. Child-led DRR extends a child-focused approach of benefiting children to being directly involved in the design and implementation of DRR activities (Back, Cameron & Tanner, 2009:6). The shift takes place on a continuum of *Knowledge*, *Voice*, *Action*, to *Action* that influences and *Action* that transforms (Back et al., 2009:37).

A study by Back et al. (2009:6) on child-focused and child-led DRR interventions applied to case studies, found that emphasis was more on the first part of the continuum highlighting the expansion and transfer of *Knowledge* and enhancing *Voice* to take *Action* on a *Protect* level. Another significant finding is the growing emphasis on engaging more youth in DRR interventions at the expense of children under 18 years who have specific needs “as well as a right to determine the world in which they will live as adults” (Back et al., 2009:7).

The present study was conducted in collaboration with the Viva Foundation of South Africa [hereafter Viva Foundation], whose vision is to be central to the transformation of informal settlements into safe and sustainable communities where the community can thrive (<https://www.vivafoundation.life/homepage/about-us>). The study focused on children who attend the Viva Independent School which is situated in the communities of Mamelodi East (see key concepts below) where the children live. Viva Foundation’s strategy is to focus on the community’s felt and expressed needs by creating a secure hub in an informal settlement and base it on familiar traditional values, namely the ‘village’ concept (<https://www.vivafoundation.life/homepage/about-us>). As a service hub, Viva Foundation meets the requirements of an organisation stipulated by Butcher et al. (2010: vii), to promote fairness and social justice to protect children who are mostly affected and to advocate for them to influence change at all levels.

Child protection includes focusing on children in climate change adaptation as they are affected by climate shocks and their futures are more uncertain concerning increasing poverty, hunger, disease and reduced access to education (Save the Children, 2009:1). While children have a variety of experiences of climate change and disasters, their views are seldom taken into consideration on DRR and adaptation (Save the Children, 2009:1).

The premise of the study was that children are not passive victims of climate change but rather “powerful agents of change” which should be active at all levels, from the community, national, to international (Save the Children, 2015:7). Furthermore, children can make significant contributions to risk reduction and adaptation and building the resilience of their communities if they have access to knowledge and skills development (Save the Children, 2015:7) that will extend *Action* to influence and transformation (Back et al., 2009:33). All actions towards improving child well-being, must consider the impacts of climate change to ensure that they present sustainable outcomes (Save the Children, 2015:3). Risk reduction and resilience go hand in hand and although it is the government’s responsibility to integrate risk reduction and resilience into development programmes which is referred to as “mainstreaming of child-centred adaptation into development processes” (Save the Children, 2015:3), this is not happening. The Viva Foundation South Africa is well situated to fill this gap. As Butcher et al. (2010:vii) state, leaders have failed in their responsibility towards “our children and our environment” and that the voluntary sector’s response to mitigate the impact of climate change, “will reflect how much we value children and young people”. The views of children on DRR and adaptation are important in developing their resilience and ensuring sustainable futures (Butcher et al., 2010:vii).

The key concepts relevant to the study are as follows:

- **Children**

Section 28 of the South African Constitution (1996) and the Children’s Act (2005:32) concur that a ‘child’ is defined as a person below the age of 18 years. The focus of the study was on children from the age of 8 to 12 years. This age group falls within the middle childhood stage of development which is characterised by further development in cognitive, physical and social skills (Schonert-Reich, Guhn, Gademmann, Hymel, Sweiss, Hertzman & Hymel, 2013).

- **Children’s perspectives**

Article 12 of the United Nations Convention on the Rights of the Child (1989) highlights the value of child perceptions and participation in matters that affect their lives. In this study, children’s perspectives refer to how they experience and understand the DRR

situation and climate change adaptation in the community. Furthermore, it implies giving and supporting children to participate and formulate their views in a child-focused manner which are determined by their age and level of maturity to accommodate their unique needs.

- **Child participation**

The NCPF defines child participation as children's basic right that entails "the active involvement of children in the decisions, processes, programmes and policies that affect their lives" (RSA, 2018:4). In this study, child participation is taking into consideration children's perspectives on DRR and adaptation when making decisions on service and policies on that affect their lives in DRR and adaptation.

- **Disaster risk reduction**

DRR can be defined as orderly steps taken to avert the occurrence of disasters as well as to minimise the extent of disaster damages (United Nations Educational, Scientific and Cultural Organization, 2023). The Sendai Framework terminology on DRR adds that DRR is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development" (United Nations Office for Disaster Risk Reduction (UNDRR), 2017). The United Nations Office for DRR (2017) cites risks such as loss of life, physical injuries, and damage to infrastructure. DRR is therefore concerned with minimising these risks (Twigg, 2015:6). This study focused on reducing risks associated with floods in Mamelodi East.

- **Climate change adaptation**

Climate change adaptation refers to the process of adjusting to the actual or expected effects of climate change to reduce the vulnerability of communities and natural systems to these changes (Intergovernmental Panel on Climate Change [IPCC], 2014). This can include actions such as implementing new infrastructure to protect against sea level rise or drought, changing agricultural practices to adapt to changing temperatures and precipitation patterns, or developing early warning systems for extreme weather events (United Nations Climate Change Conference [UNFCCC], 2015). Adaptation is a crucial component of climate change response, as even with

aggressive mitigation efforts, some level of climate change is already unavoidable due to past emissions (IPCC, 2014). Adaptation measures can help to build resilience and reduce the potential impacts of climate change, while also creating co-benefits such as improved public health and economic growth (UNFCCC, 2015). Concerning the study, climate change adaptation refers to children's perspectives on how behaviour, attitudes, and systems can be changed to be prepared for or reduce risks of actual or expected climate change impact.

- **Mamelodi East**

Mamelodi East is part of the Mamelodi township, an apartheid establishment which falls in the City of Tshwane Metropolitan Municipality in the Gauteng Province<sup>2</sup> (See website). The Pienaars River flows in front of Viva Foundation and floods the community when the river banks overflow. Informal settlements in Mamelodi East include Lusaka, Phumolong and Alaska<sup>2</sup>. The Eerste Fabriek and Riverside informal settlements in Mamelodi East are among the informal settlements in Mamelodi township which have experienced severe floods since 2019. Both Eerste Fabriek and Riverside are situated along the Moretele River (a short section of the Pienaars River). Homes in these areas have been frequently badly damaged by flooding since December 2019. During the 2019 floods, residents lost their belongings, including birth certificates, identifying documents, furniture and entire homes (Mabona, 2022). In the riverside communities, 1,500 people were affected, 74 homes were destroyed, and 240 homes flooded (Rafapa, 2021). The residents indicated that they have been struggling for better service delivery since 2007 when Alaska's informal settlement was established (Selaluke, 2021). The living conditions are not favourable for residential occupation, as shacks are erected on the mountain and river banks. There is no running water, sewerage facilities and electricity. The residents have made illegal electricity connections, making it unsafe for all residents, especially children (Selaluke, 2021).

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<sup>2</sup> See website:

<https://www.google.com/search?q=mamelodi+east+is+part+of+mamelodie+township&og=Mamelodi+east+is+part+of+mamelodie+township&ags=chrome.0.69i59.3595j1j7&sourceid=chrome&ie=UTF-8>

- **Viva Foundation South Africa**

The Viva Foundation is a non-profit organisation based in South Africa that aims to empower vulnerable communities and individuals through various social development programmes. The organisation was founded in 2007 and operates mainly in Gauteng, with some of the initiatives reaching country-wide through advocacy and activism campaigns.

Viva Foundation focuses on several key areas, including independent education, early childhood development, nutrition, security, development of the arts and music, enterprise development and sexual violence prevention and response. The organisation's programmes are designed to address the root causes of poverty, inequality, and social injustice, and to provide support and assistance to those in need. They work closely with local communities, government agencies, and other non-profit organisations to ensure that their programmes are effective, sustainable, and responsive to the needs of those they serve. Through its work, the Viva Foundation is making a positive impact on the lives of thousands of individuals and families in South Africa, and helping to build stronger, more resilient communities for the future. Viva Foundation's 'village' concept builds community resilience of their own culture and values (<https://www.vivafoundation.life/homepage/about-us>). This concept is supported by Motsa and Morojele's (2017:159) idea of 'making individual communities' cultures and social relationships responsible for how people perceive, construct and approach challenges in life'.

Viva Foundation's Mamelodi Campus is located in Alaska, an informal settlement in the Far East of Mamelodi (Mamelodi Mappers, 2015). It is situated at the edge of the Magaliesburg Mountain (Madubedube, Rautenbach & Coetzee, 2018). Although the Viva Independent School is located in Alaska, the school caters for learners from the greater Mamelodi community.

## **1.2 Theoretical framework**

Theory is intended to make the world understandable and often gives direction to interventions (Van Breda, 2019:3). In most cases one theory would be embedded in other theories and evidence making it more reliable than subjective perception (Van Breda, 2019:3). Resilience theory was used as the theoretical framework for this study.

Resilience theory is concerned with understanding what makes people thrive even when they go through hardships and has emerged from vulnerability studies (Van Breda, 2019:121,124). Cutter, Barnes, Berry and Burton (2008:601) assert that resilient communities are less vulnerable to risks and disasters than less resilient ones.

Although there is no universal definition of resilience, resilience theory offers a framework for asking questions about vulnerability to surviving and coping with adversity (Van Breda, 2019:135). Theron (2016:636) and Van Breda (2018a:4) in Van Breda (2019:129) agree that resilience is the system's capacity to do better in adversity. In the case of this study, resilience means the ability on the one hand of the participants to deal with natural disasters and on the other, the social system's (being the participants) ability to "re-organize, change, and learn" from recent disasters (Cutter et al., 2008:558). A detailed discussion of Resilience theory, which is the theoretical framework considered for this study, will be provided in section 2.7.

### **1.3 Problem statement and rationale for the study**

Climate change across the globe plays a critical role in the increasing number of natural disasters such as floods, droughts, and mudslides. In South Africa, floods have become a prominent natural disaster over the past few years. In early 2019, news reports made rounds that the KZN and Eastern Cape provinces were hit hard by floods which left a costly damage of homes and infrastructure (Dumako, 2019), yet again in the same year, Gauteng province was flooded specifically in parts of Johannesburg and Pretoria (Floodlist in Africa news, 2019). Relief web (2021) shows that the Mpumalanga, Limpopo as well as KZN provinces were not spared from deadly floods which displaced 3 200 people from 640 households. The worst floods were seen in 2022 in KZN where 400 deaths were reported. This shows that South Africa is no exception to the effects of climate change (Ngcamu, 2022:58). In Gauteng, where Mamelodi Township is located, families who live on the riverbanks of the Pienaars River have been affected by flooding since 2019 (Mabona, 2022; Mahlokwane, 2023; Mothiba, 2022). People are disproportionately affected, with children being the most affected. Disasters do not only influence their daily lives but also determine their future. Families and children living in poverty are more vulnerable as they are more likely to live in hazardous areas such as on riverbanks and hence, in the event of a flood, risk

losing their belongings and being exposed to food insecurity and water scarcity among other basic amenities.

In alignment with the UNCRC (1989), children have the right to be protected, but also to develop their agency by sharing their views on how they are affected, and how they see and want to shape their future. However, children need support, resources and opportunities to participate in discussions and decisions on climate change issues and associated risks. As change agents, children can make significant contributions to DRR and adaptation and build their own and communities' resilience to be better prepared for future disasters. According to the RSA Children's Act child participation is of paramount importance (RSA, 2005). However, despite this legislation recognising children's rights, there is minimum involvement of children in decision making (Long & Grant, 2024:1).

In the affected areas in Mamelodi East, children in the Viva Independent School are exposed to the adversities of living in poverty and the consequences of flooding for their families, homes, and the broader community. Furthermore, they are in a school setting that recognises their need for protection, but also the importance of having access to knowledge, skills, and empowerment to develop their agency while co-building a sustainable future. Viva Foundation South Africa is a child-focused organisation and the needs of children are central to their programmes.

The study will be a pilot project towards developing procedures to work with children, their families and the community in developing resilience in risk reduction and adaptation strategies in the case of flooding. The study focused on the *Knowledge*, *Voice*, and *Action*-Project levels of participation while the results of the study will be used to recommend procedures to work with children, families and the community that will shift child participation to *Action* that influences and transforms. It is envisaged that children in the Viva Independent School become change agents in their community while Viva Foundation South Africa contributes to sustainable living and uses climate-smart approaches to enhance the well-being of children and their families.

The research question for the study was as follows:

What are children's perspectives on DRR and adaptation concerning floods in Mamelodi East?

Underpinning sub-questions for the research question were the following:

- How are communities in Mamelodi East affected by floods?
- What factors contribute to floods in communities in Mamelodi East?
- How can these contributing factors be reduced in the community?
- What can the community do to be better prepared for future floods?
- How can the children work together with families and communities in reducing flood risks and develop adaptive strategies in the event of future floods?

#### **1.4 Goal and objectives of the study**

The goal of the study was:

- To determine the perspectives of children on DRR and adaptation to floods in Mamelodi East.

The objectives of the study were to:

- Explore how communities in Mamelodi East are affected by floods.
- Determine the factors that contribute to floods in communities in Mamelodi East.
- Determine how these contributing factors can be reduced in Mamelodi East.
- Explore how communities in Mamelodi East can be better prepared for future floods.
- Make recommendations on procedures for children, their families and the community to work together on reducing flood risks and developing adaptive strategies in the case of future floods.

#### **1.5 Research methodology**

This section gives a brief description of the research methodology used in the study. A detailed description is entailed in Chapter Three. The qualitative research approach was suitable for the study as it uses words to get a comprehensive understanding of the phenomenon being studied (Nieuwenhuis, 2019:59), which helps the researcher gain an understanding of children's perspectives on DRR and adaptation in their verbal

account. The purpose of the study was exploratory since the researcher was interested in gaining more knowledge on children's perspectives on DRR and adaptation. In alignment with the qualitative approach, the research paradigm for the study was constructivism. It allowed the researcher to interpret how participants create subjective meanings of their experiences of floods, risks and adaptations in their community by looking at meanings from a varied and multiple complexity approach rather than narrowing it down "into a few categories or ideas" (Creswell, 2014:8).

Action research, which is an extension of applied research, was utilised for the study for its effectiveness in an educational environment and community settings, which was the focus of the study (Ebersöhn, Eloff & Ferreira, 2019:156). For this study, Participatory Action Research (PAR) was adopted as the researcher worked together with Viva Independent School learners, which gave the participants an opportunity to share their perspectives on flooding but also gave them a platform to voice out matters that affect them (Alaca, Rocca & Maggi, 2017; Save the Children, 2015). A case study design was used as the study was based on the real-life experiences of the participants (Nieuwenhuis, 2019:89), the learners of Viva Independent School. More specifically, the researcher utilised an exploratory case study design which, according to Lucas, Fleming and Bhosale (2018:216), "explore situations in which the case being evaluated has no clear or single set of outcomes". In the case of Mamelodi East, the researcher viewed the perspectives of the child participants concerning floods and coping strategies.

Purposive sampling was employed as a sampling method for participants in this study as specific criteria were used to select the sample (Nieuwenhuis, 2019:93). The researcher used photovoice and one-on-one interviews to collect data. Photovoice enabled the researcher to involve participants with various "living realities" in the study (Alaca et al., 2017:1111). An interview schedule was used for one-on-one interviews whereby open-ended questions were asked and analysis was done through thematic analysis (Terry, Hayfield, Clarke & Braun, 2017:19). To ensure the quality of data, criteria to enhance the trustworthiness of the research findings were applied (Nieuwenhuis, 2019:143). These criteria included credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985 in Lietz & Zayas, 2010:191).

The ethical considerations appropriate for the study are discussed in Chapter Three.

## **1.6 Outline of the research report**

The chapter outline of the study is as follows:

### **Chapter One: General introduction of the study**

Chapter One outlines the overall introduction and orientation to the study. It includes the overall context of the study, the key concepts relevant to the study, the rationale for the study and problem statement, the research question, the goal and objectives of the study, a brief overview of the research methodology and the outline of the research report.

### **Chapter Two: Literature review**

The literature review includes a discussion on climate change, poverty and inequality; climate change adaptation and policies and legislation concerning disaster management, DRR and DRR management. Furthermore, it covers child participation in disaster management, DRR and the role of developmental social work in DRR with climate change. Resilience is discussed as a theoretical framework for the study.

### **Chapter Three: Research methodology**

The research methodology chapter includes the research approach; the type of research; the research design; the research methodology which includes the population and sample method of the study, data collection methods, data analyses, trustworthiness of the study and the pilot study; the ethics relevant to the study, and the limitations of the study.

### **Chapter Four: Empirical findings and discussions**

Chapter Four presents and discusses the findings of the study.

### **Chapter Five: Key findings, conclusions and recommendations of the study**

This chapter outlines the summary of key findings, draws conclusions and makes recommendations from the study.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Introduction

South Africa is experiencing an increase in natural disasters across provinces (Ngcamu, 2022:58). When a disaster strikes some population groups are more vulnerable than others (Greene & Greene, 2009:1016). People living with disability, women, older persons, and children are amongst the most severely affected by natural disasters (Matlakala, Nyahunda & Makhubele, 2021a:163). It is therefore important for children to be engaged in matters that affect their lives. Child participation becomes a crucial part of DRR both in micro and macro practice. Children today are in the best position to inform practice and DRR measures about their needs through discussions, education and involvement in policy and legislation. For instance, the case of the development of the Paris agreement (UN, 2015a), the 2030 Agenda for Sustainable Development (2030 Agenda) (UN, 2015b), Addis Ababa Action Agenda (UN, 2015c) and the Sendai Framework for DRR (UN, 2015d). According to Butcher et al. (2010:17), children will be much more aware of the importance of climate change in their lives when their views are explored and communicated. Enhancing children's voice has numerous advantages in real life and in policy development; it promotes children's empowerment and rights in DRR (Back et al., 2009:35). It relates to Articles 12 and 13 of the United Nations Convention on the Rights of the Child (UNCRC). Article 12 outlines the right of the child to express his or her views openly and for those views to be taken into consideration. Article 13 is about freedom of expression which entails the right of the child to freely seek, obtain and communicate information" on all kinds of platforms in any matter or processes impacting the child (UNCRC, 1989:5).

Participation of children in DRR will ultimately enhance the children's capacity to prepare and mitigate disaster risk and strengthen the resilience of communities' children come from. As emphasised by Save the Children (2015:3) the reduction of risks, which in this case floods, will increase children's and communities' resilience to better prepare for future floods. Child-focused DRR can be promoted by increasing children's awareness and preparedness enabling children to be proactive in their communities regarding disaster risk mitigation, information dissemination and gathering skills to prepare for upcoming floods (Back et al., 2009:16). When children believe their voices are taken into consideration it increases the chances they will

continue with their “DRR learning and actions” and this can promote sustainability as such behaviour will be passed to the next generation (Back et al., 2009:16). Social workers are well positioned to ensure that children’s perspectives on DRR and adaptation are heard and are integrated into practice through developmental social work.

This chapter gives an overview of literature relating to children’s perspectives on DRR and adaptation. The chapter starts with a discussion on climate change, poverty and inequality to point out how they are interlinked and affect children. The next section discusses the need for climate adaptation in DRR and the necessity to implement DRR policies and legislation that are child-focused to address the needs and priorities of children. Subsequently, developmental social work is discussed with emphasis on the role of social workers in climate change to contribute towards the participation of children in DRR. In this chapter, the researcher also outlines resilience theory as practice must be informed by theory. Finally, the chapter presents a summary of findings and conclusions.

## **2.2 Climate change, poverty and inequality**

Alston (2015:356) argues that it is necessary to distinguish between the effects of climate change and inequalities that already exist in society since climate change does not cause social inequalities, but the poverty, water and food insecurity that result from these events exacerbate them. Thus, it is necessary to explore the relationship that exists between climate change, poverty and inequality, starting with a discussion of climate change.

### **2.2.1 Climate change**

It was stipulated by the World Bank Group (2009:1) that the scientific community has reached a global consensus that climate change is a reality (World Bank, 2009:1). Climate change is defined as “an on-going trend of changes in the earth’s general weather conditions because of an average rise in the temperature of the earth’s surface” (Department of Environment Affairs, 2011:8). Evidence suggests that human behaviour and activity is the main contributor of climate change (Alston, 2015: 356; Jayaraman, 2019:17; World Bank, 2009:1) which has led to erratic climate conditions

causing natural disasters globally (Alston, 2015:356). In 2011, the International Federation of Red Cross and Red Crescent Societies (IFRCS) made a prediction that there will be frequent natural disasters in several parts of South Africa due to increased climate change (IFRCS, 2011:5). It was confirmed by Shokane (2019:1) that natural disasters caused by climate change have become recurrent in Africa as well as in South Africa.

Natural disasters are a global problem and pose a threat to sustainable development as they have various impacts such as loss of life, injury and diseases, destruction of property and infrastructure, damage to the environment and can cause economic and social disruption (Twigg, 2015:001). Twigg (2015:001) indicates that natural disasters include earthquakes, landslides, windstorms and floods. It is evident in the recent floods in Kwa-Zulu Natal (Ngcamu, 2022:58) and Gauteng (Moraba, 2021) as well as other parts of the country such as Eastern Cape, Limpopo, Mpumalanga, Northern Cape and North West provinces that South Africa as a developing country is more exposed to climate change.

No one is unsusceptible to natural disasters regardless of “age, gender, creed, sex, or sexual orientation” (Matlakala et al., 2021a:163). Thus, children are no exception to the severe impact of natural disasters (Alston, 2015:365; ISCA, 2008:5). Peek (2008) in Matlakala et al. (2021a:163) indicates that the number of children impacted by natural disasters in the twenty-first century will grow. As climate change continues to cause more recurrent and severe natural disasters, the risk of exposure of children to possible earthquakes and tsunamis, droughts, windstorms and floods is also increasing (Save the Children, 2007:3). Risks that children are exposed to include loss of life, malnutrition, psychological harm and its related impacts (UNICEF, 2016:2), they may have to adapt to the reality of being orphaned (Matlakala et al., 2021a:164), being displaced and moved into the short-term shelter or moved to other communities (Butcher, et al., 2010:5). Moreover, they stand the risk of further exposure to “abuse, exploitation, trafficking and disruptive education” if they come from families struck by poverty (UNICEF, 2016:2). The impacts of climate change are even more severe when children and families become poverty-stricken communities. The next section outlines the link between climate change and poverty.

### **2.2.2 Climate change and poverty**

As it has been mentioned poor people and children are less contributors to climate change, yet they are the most vulnerable to the threats of climate change (Hattingh, 2019:2). Natural disasters are a main cause that vulnerable families are forced into poverty (Hallegatte et al., 2016 in Winsemius, Jongman, Veldkamp, Hallegatte, Bangalore & Ward, 2018:328) and remain trapped in poverty (IPCC, 2014:841). According to Ngcamu (2022:62), “disasters are synonymous with poverty in developing countries”. Poor people are bound to be exposed to disasters as they do not have the means to mitigate or better prepare for disasters. Residents are exposed to disasters such as floods, harming their infrastructure and livelihoods (Ngcamu, 2022:58). Dominelli (2012:3) concludes that poverty is “a constant, ongoing disaster in its own right”. Dominelli (2012:29) further asserts that poverty is a social disaster and worsens the problems of underprivileged families after a disaster occurs. Poor people tend to be hit the hardest by disasters as they mostly stay in risky places prone to disasters (Save the Children, 2007:3; Winsemius et al., 2018:328). Children are part of poor families and are the most vulnerable as they have no political power, and are struggling to make ends meet (Alston, 2015:356).

Climate change is a huge hindrance to poverty eradication (Hallegatte et al., 2016 in Winsemius et al., 2018:330), consequently, threatening universal efforts in the fight against poverty eradication (McKinnon, 2008:263). Moreover, climate change poses a threat to sustainable development with possible chances of exacerbating “children’s poverty and increasing their vulnerability to abuse, exploitation and displacement” (Save the Children, 2007:3). Extreme poverty often pairs with violation of environmental rights as many poor people live in areas that are degraded and unsafe (Dominelli, 2012). Environmental tragedies happening in the world expose how social programmes fail to care for and protect individuals from poverty and suffering (Alston, 2015:360). Climate change is exacerbated by poverty and inequalities. The next subsection continues the discussion on the link between climate change, poverty and inequality with particular emphasis on climate change and inequality.

### **2.2.3 Climate change and inequality**

Poverty and inequality create an environment where climate change vulnerabilities increase (Intergovernmental Panel on Climate Change [IPCC], 2014:840). According

to Islam and Winkel (2017:2), inequality is persistent amid climate change discussions particularly on climate justice. The authors state that there are several types of inequalities, firstly on demographic features such as “gender, race, ethnicity, religion, and age” (Islam & Winkel, 2017:2). The second type of inequality relates to “assets and income” while “public decision making (political power) and access to public resources, such as publicly financed health, education, housing, financing, and other services” constitutes a third type of inequality. However, these various types of inequalities are interconnected (Islam & Winkel, 2017:2). Children are also affected by inequality, and their right to participation is violated as they are excluded or minimally engaged in decision-making particularly in DRR due to their age and their lack of financial contribution. The effect of inequality on their families and communities renders them vulnerable to other types of inequality as they are not in isolation from where they belong.

For Alston (2015:356), it is necessary to distinguish between the effects of climate change and inequalities as there is an interconnection between climate change, poverty and inequalities. Climate change occurs as the result of already existing deep divisions in the world and its impact intensifies existing vulnerabilities and inequalities (Hattingh, 2019:28). Poorer nations and groups, for example, are much more vulnerable to the risks and burdens of climate change, while they have contributed much less, if anything at all, to its causes. (Hattingh, 2019:28; Greene & Greene, 2009:1017). This indicates that poor people are disproportionately affected more by the adverse impact of climate change than the rich (Islam & Winkel, 2017:2; Hawkins, 2010:74). Since the most vulnerable and therefore most affected tend to be in unstable conditions which are poverty stricken with limited livelihood options, existing food and water security issues, poor services and supports and low levels of political power (Alston, 2015:365). The researcher has observed that, in the case of Mamelodi, many people come from rural areas for work opportunities and tend to reside anywhere no matter the disaster risk so long the place can afford them to be closer to work. Thomas (2017:26) reiterates that communities are exposed to flooding as they reside in areas prone to flooding as they want to access economic prospects.

Islam and Winkel (2017:2) see the relationship between climate change and social inequality as characterised by a vicious cycle which they describe in three points. First, inequality intensifies the exposure of poor people to the adverse impact of climate

change. Secondly, due to the intensified exposure, poor people are more susceptible to damages caused by climate change as a result of inequalities and thirdly, inequality minimises the capacity of poor people to “cope with and recover from” the damages they experience caused by climate change (Islam & Winkel, 2017:6). This explains why children and those living in poverty and with disability are disproportionately affected by climate change (Alston, 2015:365). They are expected to adapt to climate change despite having minimum resources to respond to their poverty (Hattingh, 2019:28; Twigg, 2015:005).

### **2.3 Climate change and climate change adaptation**

It is expected that natural disasters will increase and due to existing inequalities, those who are poor, including children, will be much more affected by the impacts thereof necessitating effective climate change adaptation measures so that children and communities can be better prepared for future natural disasters. In the upcoming section, the researcher discusses climate change adaptation, strategies for adaptation as well as climate change adaptation concerning children.

#### **2.3.1 Climate change adaptation**

Climate change adaptation entails steps taken to construct resilience and minimising costs to protect communities and economies from the effects of climate change (Greene & Greene, 2009:1020). It entails minimising vulnerabilities and risk while looking for opportunities as well as building the ability of systems to cope with the effects of climate change (Tompkins et al., 2010 in IPCC, 2014:839). Furthermore, sufficient information on vulnerabilities and risks in adaptation is vital to aid in the identification of needs and relevant adaptation options to minimise risk and build capacity (IPCC, 2014:840). The World Bank (2009:3) indicates that adaptive capacity is dependent on the level of public order, political honesty and proper economic administration. Moreover, rife poverty, little education and unequal land distribution make adaptive capacity low (World Bank, 2009:3). Stakeholders need to extend efforts for climate change adaptation as the IPCC (2014:839) acknowledges that even though there are deliberate adaptation actions taken by various governments and private

sectors to respond to predicted climate change, these actions are taken on a restrictive basis and only occasionally consider the response to climate change.

These actions include policies, investments in infrastructure and technologies as well as behavioural change initiatives (IPCC, 2014:839). Greene and Greene (2009:1020) highlight that these actions should include endorsing enhanced climate change information, upgraded planning and infrastructure which mainly applies to developing nations. Climate change information in adaptation is vital as Ngcamu (2022:53) states that “the lack of climate knowledge among government officials and communities prone to climate-induced disasters was considered to have led to the severe devastating effects of the April 2022 disasters” in South Africa. Singh (2022: 12) as cited in Ngcamu (2022:54), observed that community members who had limited information on DRR could not use the information. This observation concurs with IPCC (2014:839) that there are persons and families in all communities that have inadequate climate change adaptation capacity. This capacity changes continuously and is influenced by “economic and natural resources, social networks, entitlements, institutions and governance, human resources, and technology” (IPCC, 2014:839). Bopape et al. (2021) as cited in Ngcamu (2022:54) assert that more awareness should be done and disaster risk management systems be developed which will entail disaster preparedness and DRR. The researcher suggests that climate change adaptation education be considered compulsory for everyone, including for children in basic education and that more community engagement activities take place in communities that are more prone to natural disasters such as in the case of Mamelodi. In pursuit to push for child-led DRR institutions must work with communities where children come from as it will affect not only children but their families and communities in various ways (Butcher et al., 2010:18).

### **2.3.2 Strategies for climate change adaptation**

Local governments and their officials must be empowered and given resources because they play a vital role in adaptation planning as they have to initiate and implement various mitigation programmes and activities (Cai, Lam, Qiang, Zou, Correll & Mihunov, 2018: 24). Government through all phases has a vital responsibility to play to advance adaptation strategies and increase resilience and capacity to adapt to

climate change (IPCC, 2014:841). The improvement of infrastructure and communication in the community is an important adaptation strategy as it offers a practical way to enhance “physical capital” like strengthening dam efficiency and access to roads, while at the same time promoting social and economic capital through the creation of new employment opportunities and growing livelihoods (Cai et al., 2018:24). Twigg (2015:005) adds that flood defence and water storing constructions like “levees, water diversion channels, dams and lakes and restored floodplains” generally demonstrated effective in preventing flooding, especially in major towns and cities. After the Kwa-Zulu Natal 2022 disaster, the Moses Kotane Institute (2022:2) compiled a report which shows that the destruction triggered by the 2022 floods in Durban was aggravated by inadequate town planning, poor infrastructure, and houses built in areas prone to disasters. The effects of disasters are distressing and require actions like research to aid in town planning and appropriate maintenance of underground drainage systems to be in place in preparation for disasters (Moses Kotane Institute, 2022:2).

While some individual adaptation may be possible and will take place, government action is necessary to build new infrastructure and foster favourable investment environments in threatened areas. This includes ensuring that the education available for children is suited to the changing environment (Save the Children, 2007:10) and that their needs and capacities are granted much attention (Save the Children, 2009:4). Another climate change strategy is community engagement whereby community education about climate change and natural disasters will aid children and the community to minimise the risk for disaster and be better prepared for future disasters (Cai et al., 2018:25). Back et al. (2009:28) assert that involving local government is fundamental to sustainability and impact of DRR and may even influence the municipality to finance DRR initiatives in the community. Nevertheless, NGOs are usually the primary entry to engage children and their families in DRR and frequently work directly with communities to build participation and ownership (Back et al., 2009:28). When children and communities are empowered to engage in DRR they are better positioned to influence policy and, in a situation, to more confidently approach the local government to request funding (Back et al., 2009:28). Partnerships are necessary for the development of clearly defined climate change adaptation and its strategies. Therefore, climate change strategies require a pool of expertise from

different stakeholders ranging from children and the community to education institutions and the state including local, district and national levels. It is therefore, the role of social workers to ensure that partnerships are reinforced in DRR as it is outlined in the South African Framework for Social Services (2013:16) that intervention should be guided by shared responsibility and collective partnerships amongst civil society, the public sector, private sector, training institutes and research organisations. Children should not be left behind when strategies for climate change adaptation are considered because their perceptions are necessary and their needs and capacities should be taken into consideration when planning for DRR. The next sub-section is a continuation of strategies for climate change adaptation with specific emphasis on children

### **2.3.3 Climate change adaptation and children**

UNICEF (2016:3) is in cognisance of the threat disaster poses to children's rights and their development and suggests a holistic approach that supports children's capacities, communities and states to manage various shocks and stresses. The child-centred approach to climate change adaptation is about enhancing the wellbeing of children and comprises partnering with children, families, communities, all levels of government, and international organisations, to reduce risks that have a direct impact on children's lives (Save the Children, 2015:08). The initial step in a community that is susceptible to disaster is to create a conducive environment where children can live, play and learn (Back et al., 2009:7). It is necessary to invest in children's climate change adaptation education as it is an investment to future generations (Save the Children, 2009:1). Such an investment will also ascertain that children's voices and perceptions are in the centre of efforts to strengthen their resilience amidst climate change (Save the Children, 2015:08). Particularly because education provides a natural space for providing DRR activities (Save the Children, 2008:7). For instance after the 2004 Tsunami in India, Save the Children responded by focusing on children's participation in DRR. Their response had several components where children were engaged in preparedness and developed evacuation plans. This strategy ensured that DRR is part of the school curriculum both at the primary and secondary level (Save the Children, 2008:7). Incorporating DRR into common school activities "promotes sustainability of the messages and reduces the burden on children" (Save the

Children, 2008:7). Children have unique experiences of the effects of climate change and needs and their precise perceptions and priorities must be taken into consideration in initiatives for adaptation (Save the Children, 2009:2).

Child-led adaptation is necessary as it will enable children to contribute positively to the process of risk reduction and climate-resilient development (Save the Children, 2009:13). It is beneficial to directly engage children in the planning and implementation of DRR activities (Back et al., 2009:7). For example, in Thailand, children in schools created DRR pictures with a storybook called Albert Rabbit and a puppet show and was done to enable children to share and spread DRR information with their communities (Save the Children, 2008:7). Children are great communicators and Save the Children (2015:09) acknowledges that many communities show better understanding and action on climate change where children participated in DRR and initiatives which are meant to build resilience. Children's capacity to talk about disaster risks with their peers and families and to help make practical creative ideas for their families and communities valuable to recover from disasters (Tanner et al., 2009 in Back et al., 2009:11). In the next section the researcher explores DRR concerning child participation.

#### **2.4 DRR and child participation**

Disasters occur due to numerous factors which can be human-made or naturally induced and can occur over a short period or a long time (Twigg, 2015:002). Floods can be categorised into inundation floods and flash floods. Flash floods occur without warning because of substantial rainfall and inundation flooding develops over hours or days (IFRC, 2022). In general, disaster poses a threat to life and its impact may require support from people outside the community (Twigg, 2015:002). This was the case for families in an informal settlement in Mamelodi who early in 2023 experienced severe flooding and as a result requested the provincial government to relocate them because they lost their valuables and homes (Mahlokwane, 2023). Even though there is legislation in place for child participation, in South Africa there is minimum children's voice and involvement in decision making (Long & Grant, 2024:1). In this regard where families were requesting relocation children's views may not be taken into consideration. The NCPF has shown that throughout the world there is a common

notion of a hierarchical relationship where it is normal for children to listen, submit, accept and comply with parental authority (RSA, 2018:27).

When a disaster occurs, be it an epidemic, earthquake, storm, drought or flood, it affects the community in many ways and residents are exposed to disaster risk when they experience distress, destruction and loss in this situation which supersede the community's capacity to deal with and react to the disaster (UNICEF, 2016:2). It explains why DRR needs to be implemented effectively for children and communities. According to the United Nations Office for DRR (UNDRR) (2017), DRR aims to prevent new disaster risks, reduce present disaster risks and manage enduring risk, ultimately making a contribution to strengthened resilience and working towards achieving sustainable development. According to Twigg (2015:006), DRR can be understood in general as "the development and application of policies, strategies and practices to reduce vulnerabilities and disaster risks throughout society". The researcher believes that effective DRR would involve children as participants. It is confirmed by the United Nations Convention on the Rights of the Child (UNCRC) that children have unconditional rights covering all situations, even in disasters and they are entitled to take part in decision-making affecting their lives (UNICEF, 2016:6; Save the Children, 2009:1). Children form about fifty per cent of people who are affected by disasters, therefore it is vital for the entire DRR plans to have "an adequate assessment of children's needs and rights violations, and must involve children in the design and implementation of solutions" (Save the Children, 2007:2). Children thus have the right to participate in the mitigation, preparedness, response and recovery phases of DRR.

The UNDRR (2017 [no pagination]) explains that natural disasters cannot be fully prevented but their severity level can be substantially reduced by putting into action several plans and strategies. Mitigation strategies include improving environmental and social policies, community awareness as well as disaster-resistant infrastructure (UNDRR, 2017 [no pagination]). There is a need to empower communities, to be involved in "disaster policy formulation and post-disaster implementation plans" to allow them to have access to financial support and to help them build their assets and resilience to recover from the disaster (Nikku, 2015:605). Children should be included in empowerment programmes; the children's parliament provide one such platform whereby children's opinions and views can be integrated into policy development. Children's parliament can be used as a planned, safe and conducive environment to

promote children's participation as recognised by articles 12 and 13 of the UNCRC (1989:5) that a child has a right to his/her view regarding matters affecting their lives. A great example is a joint qualitative study done by UNICEF and the Department of Women, Children and People with Disabilities as well as the Department of Environmental Affairs in South Africa which explored "the impact of climate change on children in South Africa" (Lombard & Viviers, 2014) which shows views of South African children on climate change and their responsibility in protecting the environment. Further, the NCPF connotes that child participation in the community is the "logical extension of the right to expression and decision making", and children's exposure to public decision-making processes give them the opportunity to learn about the government (RSA, 2018:41). The NCPF further recommends that children's participation can be secured in local and national decision-making processes by creation of permanent structures and resources within the state at the local and national spheres (RSA, 2018:41).

Disaster preparedness can be described as the community's initiatives to respond to, deal with and reduce the threat of disasters and minimise the damage at the family level (Atreya et al., 2017:428; Peng, Xu & Wang, 2019:469 in Ngcamu, 2022:55). Yet again, for disaster reduction initiatives to be effective and successful community involvement is necessary (Cannon, 2008:14) and such engagements should include children. Involving children in process (including disaster preparedness) improve their social communication and builds up their social responsibility and facilitation skills (RSA, 2018:41). The strengths that children have are substantial resources for families, communities and organisations (Save the Children, 2009:1). Communities' participation in both the mitigation and preparation phase of DRR leads to communities that can respond effectively to a disaster and build back better after a disaster as the response entails "actions taken directly before, during or immediately after a disaster to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected" (UNDRR, 2017 [no pagination]). There is a lot that can be achieved by involving children in DRR as they can identify concerns and risks related to DRR (Save the Children, 2007:12). Children can effectively communicate disaster risk and are the agents of change in their communities (Save the Children, 2009:1). It is therefore, important to increase the opportunities of children's participation in DRR in the global, regional and local spheres including in

policy formulation and implementation. In the next section, the researcher highlights policies and legislation about the participation of children.

## **2.5 Policies and legislation for DRR and management**

In the present and imminent landscape of more disasters and increased vulnerability, governments, charity organisations and the broader global community should have initiatives planned to support children and their communities prepare for and mitigating the effects of climate change (Save the Children, 2007:2). Encouraging children's 'voice' in policy is about making children's needs visible, increasing their capacity and recognising them as change agents (Back et al., 2009:21). Offering children a platform to voice their views is valuable for the participating children, policymakers and for the adults hearing from children. Yet, such activities should be genuine opportunities for influence or exchange of views (Back et al., 2009:21). Child-centred DRR policies provide evidence to be effective in helping children prepare for and mitigate the risk of disasters (Save the Children, 2007:12). The researcher will discuss how international agreements and agendas such as the Paris agreement (UN, 2015a), the Addis Ababa Action Agenda (UN, 2015c), the Sendai Framework for DRR 2015-2030 (UN, 2015d) and the 2030 Agenda (UN, 2015b), are relevant in the local context, and on a national level, the Disaster Management Act (DMA) 57 of 2002 with the emphasis on its relevance for children.

### **2.5.1 The Paris Agreement**

The Paris Agreement (UN, 2015a:7) in its article 8 "recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage". In addition, the Paris Agreement on Climate Change signifies the need to conduct comprehensive risk assessments to deal with the negative impact of climate change (UNICEF, 2016:4). The Paris Agreement (UN, 2015a:9) calls for the social and economic transformation of all countries in working towards decreasing greenhouse gas emissions. It shows that children should not be left behind whereas it indicates in Article 12 that there should be cooperation in taking relevant action to improve "climate

change education, training, public awareness, public participation and public access to information, recognizing the importance of these steps to enhancing actions under this Agreement” (UN, 2015a:10), and public including children who are coming from different families and communities. There are key international agreements which link with the global climate Paris Agreement which strongly impact children’s lives (Save the Children, 2015:11). Children participated in the procedures developing the Addis Ababa Action Agenda (UN, 2015c), the 2030 Agenda (UN, 2015b) and the Sendai Framework for (DRR) (UN, 2015). There are more chances that implementation will support children’s goals and outcomes when involved in the development of such policies (Save the Children, 2015:11).

### **2.5.2 The Addis Ababa Action Agenda**

The Addis Ababa Action Agenda (UN, 2015c) is the outcome of the Third International Conference on Financing for International Development. It is a significant United Nations document which represents a shift from seeing children as passive recipients of benefits to drivers of growth and development, highlighting the “importance of equity in reaching the most vulnerable and integrating climate change and disaster resilience into development financing” (Save the Children, 2015:11). It is noted in Agenda 2063 of the African Union (AU) that African children’s circumstances remain critical because of their socio-economic status, developmental circumstances, hunger and natural disasters, and due to their physical and mental maturity, the child requires special safeguards and care (AU, 1990:7). The said Agenda offers African children a platform for their circumstances to be addressed because it recognises that investing in children is ‘critical to achieving inclusive, equitable and sustainable development’; and highlighted the ‘vital importance of promoting and protecting the rights of all children, and ensuring that no child is left behind’ (UN, 2015c: 3-4). In addition, the Addis Ababa Action Agenda states that investing in good and resilient infrastructure, such as transport, energy, water and sanitation for everyone will lead to the achievement of many other goals (UN, 2015c:8). The effective implementation of the Addis Ababa Action Agenda can lead to minimised disaster risks and in turn lessen the impact of natural disasters on children and communities. Some disasters, especially floods, are said to be increased by lack of proper infrastructure such as roads, drainage systems and proper houses (Moses Kotane Institute, 2022:2). The Addis Ababa Action Agenda

is in support of the 2030 Agenda (UN, 2015b) (see 2.5.4 below) as its “goal is to end poverty and hunger, and to achieve sustainable development in its three dimensions through promoting inclusive economic growth, protecting the environment, and promoting social inclusion” (UN, 2015c:1). Ending poverty will bring positive outcomes for children now and in the future as acknowledged that climate change and poverty are in a cyclic relationship where the other one, feeds the other.

### **2.5.3 The Sendai Framework for DRR 2015-2030 (Sendai Framework)**

The Sendai Framework for DRR was endorsed and adopted by the United Nations in March 2015 as a worldwide, approved policy of DRR. The anticipated results in the coming 15 years are “the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries” (UNDRR, 2017 [no pagination]). The Sendai Framework emphasises the importance of considering several hazards while dealing with the fundamental causes of risk and vulnerability (UNICEF, 2016:4). It outlines four priority actions namely “understanding disaster risk; strengthening disaster risk governance to manage disaster risk; investing in DRR for resilience; and enhancing disaster preparedness for effective response, and to ‘Build Back Better’ in recovery, rehabilitation and reconstruction” (UN, 2015d:14). The Sendai Framework (UN, 2015d:23) highlights the responsibility of the government in DRR but encourages mutual responsibility between the state and relevant stakeholders. It encourages participation of children as change agents and emphasises that children should be given the space and modalities to contribute to DRR, under the legislation, national practice and educational curricula” (UN, 2015d:23). A child-friendly version of the Sendai Framework makes information about DRR accessible to children (Cala & Kearney, 2015). It will increase children’s desire to participate in DRR as they are now able to engage and understand DRR. This version will enable the children to mitigate disaster risks and better prepare for future disasters (Cala & Kearney, 2015). Their capacity in DRR will help them to adapt to climate change and strengthen the children and their communities’ resilience.

#### **2.5.4 The 2030 Agenda for Sustainable Development (2030 Agenda)**

Climate change is one of the grave problems the globe is facing and its negative effects impede the capacity of the entire globe to accomplish sustainable development (UN, 2015b). The 2030 Agenda (UN, 2015b) emphasises that there is a need to empower vulnerable people including children. Children's active participation in decision-making is essential to achieve sustainability in DRR (Butcher et al., 2010:5). The United Nations declares that it will make every effort to ensure that children realise their rights and capacity by providing conducive environments through safe schools and cohesive communities and families (UN, 2015b). Furthermore, the global community acknowledges that children are "critical agents of change" who will through the 2030 Agenda have a platform to channel their infinite capacities for activism into the creation of a better world" (UN, 2015b:3). So far, the declaration made in the 2030 Agenda by the global community is the greatest acknowledgement that children's capacity to participate in matters affecting their development needs to be considered (Save the Children, 2015:11). Involving children is important because sustainability is about making certain that every child's needs are met within the planet's resources, whilst preserving these resources for future generations (Butcher et al., 2010: vii). The Sustainable Development Goals (SDGs) contain goals on fighting climate change and its effects and promoting peaceful and inclusive societies, and DRR is a key element of several goals (UNICEF, 2016:4).

Through SDG1, the 2030 Agenda aims to build resilience of those who are in vulnerable circumstances such as children so that they can be protected from disasters such as floods (UN, 2015c). It is important that children be empowered for climate change adaptation and this can be achieved through SDG4, which aims to provide quality education for all starting from basic education (Bardales & Arenas, 2015:13). This could be the integration of the Sendai Framework in mainstream education helping children through different developmental phases to acquire knowledge to mitigate disaster risks and prepare for future disasters. In its goal 10, the 2030 Agenda promotes child participation as it encourages inequalities to be reduced and that policies and intervention should be anti-discriminatory ensuring that affected peoples' voices are heard (Bardales & Arenas, 2015:19). The global community agreed through SDG11, that cities and human settlements should be made "inclusive, safe, resilient and sustainable", meaning that by 2030 all people should have access

to proper houses and basic needs, they should be involved in discussions that are related to their settlements, their resilience to disasters be strengthened and communities are prepared to deal with climate change (Bardales & Arenas, 2015:20). Children have a vital role to play to ensure that community level preparation to disasters is enhanced (IIEES: 2007 cited in Save the Children, 2008:9). They must be viewed as contributors to deal with challenges “posed by disasters so that risk awareness grows into and throughout a community” (IIEES, 2007 cited in Save the Children, 2008:9). SDG13 is titled “take urgent action to combat climate change and its impacts” (UN, 2015b:25) and it requires the integration of the micro-macro intervention as implementation of the goal cuts across individuals, families, communities and organisations engaged in climate change.

The global community envisions a life where children and communities have strong resilience and ability to adapt to climate change (UN, 2015b:27) which the researcher believes requires active participation on the individual and community level. According to the Children’s Act (2005:32), all children depending on their age, maturity and stage of development have the right to participate properly in matters affecting them and their views must be given due consideration. Thus, child participation is paramount and children should be encouraged to be part of the solutions which can contribute towards sustainable community interventions (IIEES, 2007 cited in Save the Children, 2008:9). Through the macro intervention climate change activities must be integrated into national policies, strategies and plans (UN, 2015b) and this requires the global, regional and national stakeholders to take action. Lastly, SGD 13 envisions a world with improved “education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning” (UN, 2015b:25). As mentioned, education is at the heart of climate change adaptation and its strategies and it’s also important that legislation and policy plans show how education can be used to involve children in DRR.

### **2.5.5 The Disaster Management Act (DMA) 57 of 2002**

The Disaster Management Act (DMA) 57 of 2002 created a framework for managing disasters in South Africa. Hence, the DMA entails a solid disaster prevention, reduction and mitigation emphasis in addition to the provision of emergency preparedness, swift

and effective response and post-disaster recovery (IFRC, 2020:27). The definition of disaster management in the Act, explains that DRR is an essential part of the legislation (IFRC, 2020:27). It is mandated by the DMA that local municipalities have an imperative role to play in mitigating disasters (Botha, Van Niekerk & Wentink, 2011), specifically in the formulation of various disaster-management teams with different stakeholders involving volunteers, private sector and municipal executives (Ngcamu, 2022:58). Stakeholder maintenance will also aid in establishing partnerships in the community and creation of DRR training programmes (Ngcamu, 2022:58). The limited or no engagement through consultations with children and communities is a huge gap in the DMA. There should be a review of the Act so that an amendment can be made to allow active community participation. Just like the Sendai Framework and the 2030 Agenda, a child-friendly version of the DMA will ensure that children have easier access to the Act and are capacitated to apply it.

Ngcamu (2022:59) believes that disaster management pieces of training for role players involved in DRR should be in alignment with municipal disaster plans focusing on risk awareness, preventing and minimising risks as well as assessing vulnerabilities. However, South African municipalities fail to comply with the DMA due to malfunctioning municipalities, resourcing and poorly trained municipal members in DRR all contribute to non-compliance hence municipalities are never prepared to proactively respond in cases of climate-caused disasters (Ngcamu, 2022:58).

Based on Humby's (2012:27) disaster risk analysis, policies on disaster management in South Africa are divided into three tiers. Firstly, the DMA focuses on the development of policies that directly focus on DRR while the second tier includes the management of particular disasters like floods and the last tier reviews policies on the environment and DRR (Humby's, 2012:27). In the case of the study, the focus is on the second tier as it focuses on preventing and mitigating floods in overall DRR. Innovative methods to engage with children and their communities are necessary, as old methods might not be adequate, and previous practice is not a reliable guide for the future (Save the Children, 2007:10). Developmental social work offers social workers a platform to engage in DRR as it is an inclusive approach that addresses the needs of South Africans which include children (Triegaardt, 2019:65). The next discussion deduces how developmental social work enables social workers to play a role in DRR.

## **2.6 Climate change and developmental social work**

As earlier discussed, (see section 2.2), climate change exacerbates existing inequalities and poverty of vulnerable groups which justifies the role of social work in advocating for environment and climate justice and contributing to just, fair and sustainable communities where children can thrive and have a future. There is much that social workers can do at a global, regional, national and local level to work toward a more inclusive society where equality (Alston, 2015:360) as well as climate change and disasters are addressed and this can be achieved through developmental social work. Developmental social work is based on themes with a strong foundation on human rights, partnerships, participation, integration of social and economic development and bridging the micro-macro practice divide which offers a platform to address both the inequalities and poverty concerning climate change (Patel, 2013:82).

### **2.6.1 Human rights approach**

Developmental social work is founded on human rights which facilitates interventions that will assist communities in understanding their rights (including environmental rights) in meeting their needs (Patel, 2013:156). It is therefore vital for social workers to aid children in understanding their human rights which include current and future generations' environmental right to live in a clean, healthy and safe environment (Hawkins, 2010:74). Therefore, social workers focus on social justice should include environmental justice as poor people are more severely impacted by environmental degradation (Miller, Hayward & Shaw, 2012: 271).

### **2.6.2 Participation**

Participation is another central theme in the developmental approach (Patel, 2013:105). It stresses the importance of involving people's voices in matters impacting their development (Lombard, 2014:49). The impacted individuals in disasters, including communities and children must be "drivers of change rather than remain the receivers of it" (Mizutori, 2019:2). The participation of communities in DRR will allow them to minimise their vulnerability, improve their resilience to protect themselves against the severe impact of disasters by being well prepared to mitigate the hazards of upcoming disasters (Greene & Greene, 2009; Rapeli, 2009). Developmental social

work enables social workers to advocate for children and their communities to influence change at all levels (Butcher et al., 2010:5).

### **2.6.3 Partnerships**

According to the National Development Plan (NDP) (2012:18) of South Africa, the transformation of South Africa is influenced by decisions and actions taken at local and global levels (NDP, 2012:18). Furthermore, the absence of inclusive partnerships leads to the failure of policy implementation (NDP, 2012:14). This statement applies to DRR and management, insisting that for successful DRR, partnerships between local, national, regional and global stakeholders should be strengthened for successful policy implementation. Mizutori (2019:2) is of the view that the City of Tshwane's disaster management plan through its implementing partners fails to relocate residents who are residing in disaster-prone areas to better neighbourhoods before the next disaster strikes. Evacuation of houses, for example, requires gatekeepers from both the provincial and grassroots level partners to encourage residents to leave disaster-prone areas. Mizutori (2019:2) further states that "radical transformation" in disaster management is necessary to motivate the public and private sectors to work together to prevent disasters instead of being reactive by responding to disasters. Social workers should create a conducive environment to empower children to become agents of change and partners in decision-making (Butcher et al., 2010: 5). Enhancing partnership in DRR at both local and global levels will have greater benefits for the community by improving resource mobilisation and coordinating DRR activities to support community resilience and adaptation.

### **2.6.4 Bridging the micro-macro practice**

Developmental social work enables social workers to use DRR and management interventions that target communities, families and individuals. As Lombard (2019:58) asserts, developmental social work emphasises the utilisation of "intervention strategies that target the masses to ensure greater impact on ending poverty, hunger and inequality" while taking into consideration a people-centred approach focusing on individual vulnerabilities. Sub-sections 2.2.2 and 2.2.3 explain how poverty and inequality exacerbate climate change, highlighting the need for developmental social

work in DRR and adaptation. This approach, which focuses on both micro and macro practices, is important for effective DRR and adaptation (Lombard, 2019:58).

### **2.6.5 Integration of social and economic development**

As explained earlier (see section 2.2.3), poor communities tend to reside closer to areas with economic prospects even when the area is inclined to be hit by disasters (Thomas, 2017:26). Integration of social and economic development is vital in DRR because ending poverty requires socio-economic strategies that “will do justice” to low-income earners who are poverty-stricken (Lombard, 2019:59). The interconnection of the social and economic aspects pertaining disasters should be considered through developmental social work.

### **2.7 Theoretical framework: Resilience theory**

Although there is no universal definition of resilience, resilience theory offers a framework for asking questions about vulnerability to surviving and coping with adversity (Van Breda, 2019:135). Resilience is the system’s ability to perform better during hard times (Theron, 2016:636 & Van Breda, 2018a:4 in Van Breda, 2019:129). In the case of this study, resilience means the ability on the one hand of the community to deal with natural disasters and on the other, the social system to “re-organize, change, and learn” from recent disasters (Cutter, Barnes, Berry, & Burton 2008:558). Strengthening resilience in the community can affect successful DRR (Cannon, 2008:10). Reducing risks for disasters and in this case, floods will increase children’s and communities’ resilience in being better prepared for future floods (Save the Children, 2015:3).

In this section, the researcher discusses various types of resilience that should be strengthened for communities to better deal with disasters, namely community resilience, social resilience, infrastructure resilience and economic resilience.

- **Community resilience** is the presence, development and arrangement of resources by members of the community to thrive in an environment that is continuously changing, uncertain and unpredictable (Cai et al., 2018:15).

- **Social resilience** is indicated by social capacity of the community which is seen through social inclusion, social protection and participation (Terblanche, De Sousa & Van Niekerk, 2022:6). Social resilience can be improved by developing and implementing disaster plans, having secure insurance and having information to assist with recovery (Cutter et al., 2008: 603). This suggests that it considers children's and communities' circumstances before the occurrence of a disaster, as well as their ability to respond and recover after the disaster (Cannon, 2008:10).
- **Infrastructure resilience** entails both the physical systems like drainage systems, roads and bridges, housing and transportation network "as well as their reliance and interconnectedness on other infrastructure" (Cutter et al., 2008:604). Terblanche et al. (2022:8) add that infrastructure resilience is the capacity of infrastructure "to prevent, withstand, recover and adapt from the effects of various hazards" When looking at infrastructure resilience, it is important to take into consideration the social environment which is a combination of both the relational factors (between people) and environmental factors such as access to services, employment, shelter, and access to income (Van Breda, 2019:135).
- Lastly, **economic resilience** plays a crucial role in disaster management. Individuals with economic means are better able to overcome the adverse impacts of disasters due to the higher level of self-protection (Cai et al., 2008:5). Economic assets reduce affected people's dependence on external post-disaster aid and allow them to recover better from disasters. Investing in resilience has economic gains and it also benefits entire communities through increased understanding of climate change (Save the Children, 2015:3). Linked to Van Breda's view it is effective to open pathways for change (Van Breda, 2019:135). Various authors state that understanding the risks, vulnerabilities, and non-protective factors of each community could inform possible pathways to increase resilience which in turn will positively impact the response and recovery phases in the case of a disaster (Cannon, 2008; Cutter et al., 2008; Greene & Greene, 2009).

Collaboration between the government and non-government sectors as well as with communities is crucial, as these resiliencies require partnerships. The government

also has to do its part by creating enabling conditions and providing the necessary infrastructure for communities to engage. Having an enabling environment resonates with Nikku's (2015:602) remark that disasters are in themselves not fatal but that it is poor infrastructure in disaster areas that causes fatalities. This was also seen during the recent floods in the Kwa-Zulu-Natal province where victims blamed poorly maintained infrastructure for the havoc that the floods wreaked (Rall, 2022). Cutter et al. (2008:599) argue that context-specific assessments and interventions are key to transforming communities from disaster vulnerability to disaster resilience. Folke (2006), cited in Cutter et al. (2008:600) flags the need to not only reorganise but to build back better through learning and adaptation. Resilience relies on the number of assets, access to resources, and the opportunities that individuals and communities have (Cannon, 2008:65). Cannon (2008:6) stresses the importance of shifting the concept of vulnerability from community members' suffering to understanding the reasons why vulnerable communities exist and addressing the issues to reduce vulnerability.

The resilience, assets and resources of a community have an impact on the recovery process after a disaster (Cutter et al., 2008:601). It has to be acknowledged that communities' inside, resilience differs depending on opportunities that are distributed unequally (Cannon, 2008:10). Inequality thus influences and determines the level of resilience in responding to disaster. As earlier discussed, the poor are much more vulnerable to disaster than those with resources (Ngcamu, 2022:61). Romero-Lankao, Gnatz, Wilhelmi and Hayden (2016:11) assert that disasters typically have multiple effects, including risks to people's lives, property, infrastructure, the environment and community welfare. Romero-Lankao et al. (2016:11) further assert that the possible effects of disasters visibly highlight the relationship between disaster management and human rights, including the right to life, safety, housing, and a conducive environment to name a few. Access to basic human rights reduces vulnerability and increases resilience. As a human rights-based profession committed to social justice for all, social work has a crucial role to play in climate change adaptation by working with children and communities to develop their resilience in mitigating risks and being better prepared for future disasters. Social workers should then utilise the resilience theory to provide support and in the case of this study, include the voices of children and

communities in DRR and adaptation by drawing from their strengths and capacities (Van Breda, 2019:135).

## **2.8 Summary**

Chapter two presented a literature review on DRR and adaptation with children. Climate change is increasingly contributing to multiple disasters such as floods which affect everyone including children. The discussion pointed out how climate change, poverty and inequality are intertwined and how the impacts play out in a cyclic relationship. DRR and adaptation strategies should be targeted at the mitigation and preparedness phases of the disaster managing process to shift social work's response to disasters from the response and recovery phases. More efforts for DRR and adaptation are required to counteract the impact of climate change, including raising awareness through education, improving infrastructure and enhancing stakeholder engagement.

Child participation is central to DRR and adaptation to the impacts of climate change and disasters. This chapter briefly described DRR policies that focus on children's needs and capacity to engage in DRR. Child-centred policies are required as climate change does not only have impacts on the broader community but affects children today and their future threatening sustainable development. International and national frameworks that are in place to recognise children's role and enable their participation in DRR include the Paris Agreement (UN, 2015a), the Addis Ababa Action Agenda (UN, 2015c), the Sendai Framework (UN, 2015d), the 2030 Agenda (UN, 2015b) and the Disaster Management Act 57 of 2002. These agreements present social workers with an enabling environment to engage in DRR and adaptation while developmental social work provides a pathway for DRR because it's embedded in human rights, participation, and partnerships, bridging the micro-macro practice divide and integrating social and economic development. Resilience theory was explained as a relevant theoretical framework for this study. Focusing on the reduction of risks and vulnerabilities will enhance the community's ability to mitigate and be better prepared for future floods. The next chapter presents the research methodology that guided the study.

## CHAPTER THREE: RESEARCH METHODOLOGY

### 3.1 Introduction

Chapter Three presents the research methodology used for the study. The chapter starts with a discussion of the research approach, followed by the type of research and the research design. The next discussion focuses on the research methods which include the study population, sampling, data collection and data analysis methods. The ensuing discussion outlines the pilot study, ethical aspects relevant to the study and the trustworthiness of the study. The chapter ends with a summary.

### 3.2 Research approach

Children have unconditional rights to take part in issues affecting them and that includes matters related to disasters (UN, 1989:5). The research paradigm appropriate for this study was constructivism, as it encourages child participation. In the case of this study, it allowed the child participants to develop their own interpretations and perceptions of their experiences during floods, and to suggest adaptation strategies to mitigate the risks. In line with constructivism, qualitative research was employed for the study (Nieuwenhuis, 2019:4). Qualitative research is individualistic, it embraces the subjectiveness of individual experience such as perceptions of children who experienced floods (Cropley, 2022:9). Qualitative research focuses on the natural environment where the phenomenon takes place which was the case in this study. The researcher was able to understand the participants by relying on their verbal accounts of their experience of floods rather than on numbers, as qualitative research is about words of the participant to understand the phenomenon being studied (Nieuwenhuis, 2019:59). Qualitative research studies are exploratory in nature when “there is little to no knowledge” about a certain phenomenon of interest to the researcher (Nieuwenhuis, 2019:61). The study was exploratory, exploring the perspectives of participants in how floods have been affecting communities in Mamelodi East. The qualitative research approach allowed the researcher to engage in a dialogue with the participants on their perspectives on DRR and adaptation strategies.

### **3.3 Type of research**

Action research was used in the study as an extension of applied research which is suitable in education setups and community environments (Ebersöhn et al., 2019:156). It encourages collaboration between the researcher and the participant (Ebersöhn et al., 2019:156), which made it effective for this study. The characteristics of action research include contributing to forming new ideas and practices, promoting collaboration, involving the user (Maree, 2019), and speaking to the promoting partnership principle of the 2030 Agenda (UN, 2015b).

There are four types of action research being technical action research, practical action research, participatory action research (PAR) and emancipatory action research (Ebersöhn et al., 2019:158). For this study, the researcher employed PAR since she collaborated with Viva Independent School's staff, which gave the participants an opportunity to share their perspectives on flooding but also gave them a voice in issues that affect them (Alaca et al., 2017; Save the Children, 2015). Children giving input on DRR, as well as adaptation ventures, will in turn recognise their agency in their lives and enable them to prepare for and mitigate the impact of future floods (Save the Children, 2009:1).

### **3.4 Research design**

Research designs are strategies and practices for research and are selected according to the type of research problem or topic that needs to be addressed, the experiences of the researcher and the participants of the study (Creswell, 2009:1). In this study the problem of flooding that was explored relates to how the community of Mamelodi East is affected by floods as a disaster, what strategies they can use to reduce the related risks, and how they can develop resilience to be better prepared for future floods.

The case study was based on the real-life experiences of the participants (Nieuwenhuis, 2019:89), namely learners of the Viva Independent School. The case study design helped the researcher to gain a detailed understanding of the phenomena being studied (cf. Kramer, Fynn & Laher, 2019; Leedy & Ormrod, 2015). The researcher was able to interact with participants regularly during the data collection process (Leedy & Ormrod, 2015:272). More specifically, the researcher

used an exploratory case study design which, according to Lucas et al. (2018:216), “explore situations in which the case being evaluated has no clear or single set of outcomes”. In the case of Mamelodi East, the researcher explored the views of the child participants concerning floods and strategies to cope.

### **3.5 Research methods**

This section discusses the research population and sampling, data collection methods, data analysis, trustworthiness of the data, and the pilot study. VIVA Independent School in Mamelodi East was the research site for the study. The planning of the research was a joint activity between the eight researchers (MSW students), the study supervisor and the school. The introduction of the project to the school learner population, selection of participants for the study and preparation for data collection was a collective process by the eight researchers in collaboration with the school. When the sampling process was completed, each researcher further worked independently with the sampled learner groups to collect data. The sampling and data collection process will be next discussed.

#### **3.5.1 Study population and sampling**

The study population refers to the possible participants who have the characteristics that the researcher is interested in (Makofane & Shirindi, 2018:34). The broad population of interest for this study was all the learners of Viva Independent School. Purposive sampling was employed as a sampling method for participants in this study. Etikan, Musa and Alkassim (2016:2) define purposive sampling as judgment sampling, which is an intentional selection of participants due to specific characteristics that they have. In addition to having similar characteristics, purposive sampling is used with people or groups who have information of interest regarding the problem investigated (Orcher, 2016:62). Purposive sampling was used to select a sample of three learners from the Viva Independent School based in Mamelodi East who met the following criteria:

- Agree to voluntarily participate in the study.
- Aged 8 to 12 years.
- Male and female learners.
- Learners who are able to communicate in English.

- Be affected by at least one flood in the past.
- Ability to take pictures with a smartphone.
- Willing to walk in the community to take photos of risks for flooding.

In addition to inclusion criteria, the purposive sampling technique allows for a basis of exclusion as per the researcher's judgment. About this study population, the criteria for exclusion applied to learners who did not fall within the required age for participating in this study and learners who would have indicated that they were suffering from post-traumatic stress disorder because of floods or other trauma. These exclusion criteria were in line with the best practice principle which aims to prevent harm to participants (Maree, 2019:48).

The school assisted with a list of grade four, five and six learners who met the criteria for the study. From the list of 32 potential participants from grades four, five and six, twenty-eight learners finally participated. Two learners were excluded after the school indicated that they were part of the school choir and two learners were absent from school on the day of the study interviews. To give the learners who met the sample criteria a fair chance to be included in the study, their names were chosen by a draw. The school appointed an independent person to draw the participants' names for inclusion in the study.

At the beginning of the sampling process, the researchers as a collective visited the school and had an introductory information session on DRR, to introduce all learners of the school to the study to solicit their interest and continuing engagement in DRR after the study's findings have been released. The information session was done through a role play where the researchers explained to all the learners of the school what the study was about and that it would commence as a pilot project for the school with three/four learners in the class who meet the sampling criteria.

The school created three boxes as per grade (grade four, five and six) with the names of the learners who met the criteria. The independent person then drew the names of the participants by drawing a name from each box, so that each researcher's group consisted of grade four, five and six learners. The researcher had four participants, two from grade four, one from grade five and one from grade six. However, only three

learners participated in data collection as one of the participants was absent from school on the day of data collection.

### **3.5.2 Data Collection**

The researcher used photovoice and semi-structured interviews to collect data. Photovoice is a PAR data collection method whereby photos are used to represent the experiences of the participants (Delgado & Wester, 2020:193) and community members are involved in a process that is facilitated to create stories of change about their communities (Kessi, Kaminer, Boonzaier & Learmonth, 2019:354). Photovoice is a child-friendly tool that enhances the participation of children in research as “peer researchers and change-makers” (Cai, 2017:1174). It further promotes the inclusion of young children in research with different “living realities” (Alaca et al., 2017:1111), enabling the researcher to collect detailed and rich information (Wang & Burris, 1997 in Ebrahimpour, Esmaeili, & Varaei, 2018:216). According to Alaca et al. (2017:1112), the disadvantage of conducting a photovoice project with a large group of participants is the cost. However, the number of research participants for the study was small which reduced the costs.

The participants received a smartphone from the researcher to take pictures of what they saw as risks for floods in the community. The participants walked in the community observing and using the smartphone on a rotation basis. When one participant identified a picture they wanted to take, he/she would request the phone, take the picture then return the phone to the researcher who kept the phone until another participant wanted to use it. The participants took turns in this manner until the picture-taking process was completed. Each participant selected three photos from all the photos that he/she had taken to discuss with the researcher in a one-on-one interview. During the introductory information session on DRR, the participants were informed that they are not allowed to discuss their pictures and this was done to ensure that participants are not influenced by the researcher, their teacher, or their fellow participants on which pictures to take. However, while the participants took similar pictures, their views on the images differed during the semi-structured interviews. After the participants had taken pictures, semi-structured interviews followed the next day at Viva Independent School. The semi-structured interviews were guided by a predetermined interview schedule (Welman, Kruger & Mitchell,

2010:167). Nieuwenhuis (2019:108) posits that this type of interview is commonly employed in research projects to corroborate data obtained from other sources. In the context of this study, semi-structured interviews were utilised to corroborate data derived from participants' photographs. Typically, these interviews are not prolonged (Nieuwenhuis, 2019:108) and are based on a predefined line of inquiry established by the researcher (Welman et al., 2010:167).

The researcher was guided by a semi-structured interview schedule (see Appendix A attached) to interview each participant separately. A semi-structured interview schedule includes well-thought-through questions that help the researcher to ask open-ended questions (Welman et al., 2010:167). The semi-structured questions helped participants to express their views without restrictions (Mock, 2005 cited by Makofane & Shirindi, 2018:40). However, the researcher must remain attentive to the participant's responses, allowing for the identification of new lines of inquiry related to the studied phenomenon (Nieuwenhuis, 2019:109). The semi-structured questions helped participants to express their views without restrictions (Mock, 2005 cited by Makofane & Shirindi, 2018:40). There was no restriction time, the duration of the interview was dependent on the participants and the researcher's engagement. Although the English language was a criterion, some learners would use both English and Setswana and the researcher was also able to engage them as she is Tswana speaking person. By offering the learners/participants an opportunity to express their perspectives on the risks and adaptative strategies enabled them to be active in decision-making and take ownership of the research process (Kessi et al., 2019:355). In addition to the photovoice and semi-structured interviews, the researcher made observations at the research site of participants' behaviour, their interactions, and interactions with each other while taking photos.

### **3.6 Data analysis**

Thematic analysis is considered an appropriate data analysis method for the qualitative research approach (Nowell, Norris, White, & Moules, 2017:4). The reflexive thematic analysis method was used to analyse the data obtained from both the photovoice and one-on-one interviews. This method of data analysis is described by Nowell et al. (2017:2) as “analysing, organizing, describing and reporting themes found within a data set”. The reflexive thematic analysis method involves arranging

the data, identifying themes, and reporting the results as it manifested in six phases (Terry et al., 2017:31). These phases were implemented in the study as follows:

### **3.6.1 Familiarisation**

In the first phase, the researcher familiarised herself with the collected data which is important for data analyses (Braun & Clarke, 2006:87). This was done by listening to the audio recording of the interviews and transcribing the voice recordings, reading transcripts, and considering field notes. Since the semi-structured interviews were conducted in English and Setswana, the Setswana words were included in the transcript, along with their English translations. The researcher started making notes in this phase (Braun & Clarke, 2006:87). The notes assisted the researcher to prepare to write the narratives of the participants' photos.

### **3.6.2 Coding**

The second phase started when the researcher was well familiarised with the collected data to commence with the process of generating initial codes (Braun & Clarke, 2006:88). During this phase, important possible themes and sub-themes were identified and data was colour-coded. The initial generated codes were assembled based on their interrelated relevancy to one another (Braun & Clarke, 2006:87; Nowell et al., 2017:6).

### **3.6.3 Generating themes**

The third phase commenced when the collected data was coded and all the initially generated codes were grouped according to their relevance to one another. The collated codes were then organised and used to develop themes (Braun & Clarke, 2006:89; Nowell et al., 2017:8). A theme reflects recurring and dominating responses from participants and is relevant to the research question (Braun & Clarke, 2006:91). At the end of the third phase, the researcher identified potential main and subthemes.

### **3.6.4 Reviewing themes**

The proposed themes were reviewed and refined in the fourth phase of data analysis. In this phase, the themes may be collapsed, merged, or deleted based on data (Braun & Clarke, 2006:92). The coded data was reviewed, data determined that there was a pattern and the themes captured the meaning of the collected data (Nowell et al.,

2017:9). The reviewing process included the emergence of relevant data which was not covered by existing codes. The insertion of a new code is allowed as the coding process is not linear (Nowell et al., 2017:9). The researcher kept this in mind during the coding process and accommodated new themes when they emerged, on condition that they were not covered or reflected in any existing codes.

### **3.6.5 Defining and naming themes**

The core task of the fifth phase was the identification of relevance between defined themes and existing data. According to Braun and Clarke (2016), as cited in Nowell et al. (2017:10), a decision has to be made on what aspect of the data each theme captures and identify its relevance to the research questions. The researcher intentionally phrased the themes to give the reader a sense of what is going to be discussed (Nowell et al., 2017:10). During this phase, the researcher unpacked each theme by using data from transcribed material and field notes.

### **3.6.6 Writing the report**

The concluding phase of data analysis involved telling a written story in which the researcher wrote this research report which was assembled through integrating opinions, thoughts, and perspectives of participants on reducing flooding risks and suggesting adaptation strategies. The research report entails a brief, coherent, logical, non-repetitive, and thought-provoking account across themes (Braun & Clarke cited in Nowell et al., 2017:11). The findings in Chapter Four, include direct quotes from participants and integration of the literature.

### **3.7 Data quality**

In alignment with the applied research approach of the study, the trustworthiness of data was assessed to ascertain the suitability of data analysis (Nieuwenhuis, 2019:143). Four identified criteria were employed by the researcher in this study namely credibility, transferability, dependability, and confirmability to ensure the trustworthiness of data (Lincoln & Guba, 1985 in Lietz & Zayas, 2010:191).

For Tobin and Begley (2004) as cited by Nowell et al. (2017:3), credibility is about the correct presentation and interpretation of data collected from the participants about

the participants' views. The authors recommend that credibility be increased through provision of feedback by doing a check on the process of research. In this study, the researcher received feedback from her supervisor by discussing the research methodology of the study with her. In addition, credibility was improved through utilisation of different qualitative data collection methods which is photo-voice and semi-structured interviews which were later transcribed (Kalu & Bwalya, 2017:50).

According to Nowell et al. (2017:3), transferability is concerned with generalising the inquiry. In addition, it is concerned with proving the validity of findings by achieving similar results when the research is conducted with different participants (Burns, 2015:192). In the proposed study, the participants selected photos concerning risk reductions for floods and adaption. The method of photo voicing and one-on-one interviews were repeated with three individual participants who had the same inclusion criteria in similar contexts.

To ensure adherence to the criteria of dependability, the researcher provided a detailed description of the methodology applied and ensured that it was logical and documented (Morse, 2015; Stenfors, Kajamaa & Bennett, 2020; Nowell et al., 2017:3). The researcher worked with the supervisor who thoroughly examined the research process, identified gaps and suggested changes that need to be made.

According to Nieuwenhuis (2019:145), confirmability refers to the research design and implementation, data collection methods, and the reflective appraisal of the project. Confirmability was enhanced through an audit trail which is an ample description of how the data was analysed as well as through peer debriefing with fellow students and through consultations with the research supervisor (Gunawan, 2015; Nowell et al., 2017).

### **3.8 Pilot study**

A pilot study is a trial done before the actual study to aid researchers in making required changes to the study (Makofane & Shirindi, 2018:41). It offers the participants the opportunity to test their ability to capture clear pictures to be used for data analysis (Makofane & Shirindi, 2018:41). Although a pilot study can assist the researcher to test the research question and methods as well as identify obstacles and safety issues

before the actual study, according to the Indeed Editorial Report (2024), the participants' safety is prioritised over the results of the study. The researcher planned to do a pilot study with the first participant. However, due to safety reasons for the learners to walk in the community with mobile phones, even in the presence of adults, the school advised that all data collection should take place at a particular time slot in one day. It was important to consider the fundamental principle of avoidance of harm including physical harm (Babbie, 2017). Therefore, a pilot study did not take place. Nonetheless, during the preparation session for data collection, the participants were guided on how to take good pictures, and they were also allowed to practice by taking pictures during the session. Furthermore, the information day to introduce the study at the school offered the learners an opportunity to ask questions about the study.

### **3.9 Ethical considerations**

Considering ethical aspects is the basis of the integrity of the research process. Hasan, Rana, Chowdhury, Dola and Karim (2021:1) describe ethical considerations as guiding principles that regulate the conduct and actions of the researcher. To ensure that the researcher engages with learners on the acceptable terms of Viva Independent School, the researcher signed a child protection policy which entailed guidelines to facilitate a safe and nurturing environment for children. Ethical clearance for the study was obtained from the Faculty of Humanities at the University of Pretoria, the protocol number is HUM013/0623 (see Appendix B attached). The following ethical considerations applied to the study.

#### **3.9.1 Informed consent**

It was imperative to have informed consent and assent forms signed by the research participants and their parents to ensure that they were well aware of the research process and procedures (Babbie, 2017; Du Plooy-Cilliers, Davids & Bezuidenhout, 2014). The assent form provided information in a manner that was child-friendly to ensure that the participants knew what the study entailed (Einarsdottir, 2007:205). An age-appropriate assent form was developed for this study (see Appendix C attached). Parents and guardians signed an informed consent letter (see Appendix D attached). Both the assent form and the informed consent letter were given to the school after the information sharing session. The school took the responsibility to communicate with parents about the participation of their children in the study. The school then gave

the learners the assent letter and informed consent to sign at home and bring them back to school. The informed consent and assent forms outlined the goal of the study, the research process and procedure and emphasised that there was no compensation for taking part in the study. Furthermore, participants were informed that the learners would be accompanied by the teacher and researcher during data collection to reduce any possible risk of walking in the community.

### **3.9.2 Voluntary participation**

The researcher ensured that the participants were well informed that they were not forced to take part in the study (Babbie, 2017:63). Furthermore, the researcher was open to accepting the decision of parents and or participants if they did not want to participate in the study. Furthermore, if they agreed to participate and wanted to withdraw at any time from the study, they were welcome to do so. Participation was thus fully voluntary. During the preparation session, it was made clear that taking part in the study was voluntary and participants understood that they could stop participating in the study at any time without any repercussions (Du Plooy-Cilliers et al., 2014; Strydom 2011:116).

### **3.9.3 Working with gatekeepers**

Permission to access participants was sought from gatekeepers (McFayden & Rankin, 2016:82). In the case of this study, the researcher was granted permission from the Chief Executive Officer of Viva Foundation South Africa to conduct the study with learners from Viva Independent School (see Appendix E attached).

### **3.9.4. No harm**

The researcher did not cause any physical or psychological harm to participants in the study (Babbie, 2017; Hammett, Jackson & Bramley, 2022). However, visibly walking in the community with a phone and taking photos, posed risks to the safety of child participants. Therefore, the three participants collected data in a group accompanied by the researcher and a teacher. A further safety buffer was that the participants collected data close to the school. Even though one of the exclusion criteria was that learners who indicated they were suffering from post-traumatic stress disorder because of floods were excluded, it was necessary for the researcher to remain mindful that participants could still experience emotional distress during the study.

When participants needed counselling, the researcher planned to refer them to a social worker at Viva Foundation. However, no such request was received from participants.

### **3.9.5. Confidentiality**

The participants knew one another in the study as they were collectively prepared for data collection. Furthermore, the teacher also knew who participated in the study as he walked with the participants in the community. However, the participants' responses were kept confidential, and the findings were not linked to any participant. Although the teacher walked with the participants, no information regarding the data collected was shared with the teachers and thus no confidentiality agreement was signed by the teachers. Pseudonyms were used to protect the identity of the participants concerning their specific responses (Motsa & Morojele, 2017:162). Any limits to confidentiality were communicated to the participants (Babbie, 2017:65) such as the importance of co-participants keeping shared information confidential. The researcher ensured that data and transcriptions of interviews are safely stored and locked away in password-protected computer files to which only the researcher can access.

### **3.9.6 Actions of the researchers**

To ensure that findings represent the participants' views, the researcher maintained a collaborative relationship between the researcher and the participants during the data collection process (Dockett, Einarsdottir & Perry, 2009:283). The researcher was aware of the power differences (since the participants were children) and refrained from any conduct or actions that were exploitative and upheld the principles of respect and beneficence toward the participants (Pillay, 2014:197). The researcher upheld all ethical considerations by ensuring data quality was maintained by being neutral and interpreting results as they were and by presenting the findings truthfully in this research report (Du Plooy-Cilliers et al., 2014:269). The eight researchers, in collaboration with the supervisor, planned to give feedback to the school on the overall results of the study.

### **3.9.7 Dissemination of research findings**

Rose and Flynn (2018:28) define research dissemination as the release of research findings to those who require and utilise them. Bartlet (2013 in Rose & Flynn, 2018:28) avers that the release of findings should include academic and non-academic audiences and therefore language and writing style should be tailored for specific audiences. The research report from this study will be uploaded to the UPSpace website. Furthermore, research findings will be submitted to a journal for possible publication, and considered for a conference paper. The findings will also be disseminated to Viva Foundation South Africa and the Viva Independent School community to share with the broader school community and to plan for further projects in collaboration with VIVA Independent School.

### **3.10 Limitations of the study**

The researcher experienced several limitations to the study. First, it was a limitation that the researcher could not do a pilot study because she could not establish whether the interview schedule and photovoice were effective data collection methods for the planned study. However, the information session where participants were trained to take good pictures prepared them for the excursion in the community. Moreover, the researcher utilised the interview with the first participant as a benchmark to rephrase challenging questions for the remaining two participants. Secondly, learners had time restrictions as the school had to ensure that the learners did not spend much time wandering in the community with mobile phones to avoid attracting the attention of potential thieves. The researcher was ethically inclined to protect the participants at all times and has agreed to the terms and conditions of the Child protection policy signed with Viva Independent School. Lastly, taking pictures as a group and sharing the same mobile phone to take pictures influenced other learners, as one would take a picture simply because another learner in the group took the picture. However, through one-on-one interviews, the researcher prompted individualised experiences and perceptions of each child on their selected photos.

### **3.11 Summary**

This chapter presented the research methodology of the study. It entailed a discussion on the qualitative research approach and constructivism paradigm which were employed in the study. The explorative research goals of the study were explained in

the context of applied and more specifically PAR research. The importance of a case study design, particularly exploratory case study design, was described and the research methods used for the study were described. The sample was purposively selected in collaboration with the VIVA Independent School and data were collected through photo voice and one-on-one semi-structured interviews guided by an interview schedule. Thematic analysis and the strategies to ensure the trustworthiness of the data, including credibility, transferability, dependability, and confirmability were discussed. The researcher explained why a pilot study could not be done in this study. The ethical considerations for the study were outlined and finally, the limitations of the study were discussed.

# CHAPTER FOUR: EMPIRICAL FINDINGS AND DISCUSSIONS

## 4.1 Introduction

This chapter presents and discusses the empirical findings of the study.

The research question that guided the study was as follows:

What are children's perspectives on DRR and adaptation concerning floods in Mamelodi East?

The sub-questions that informed the study were:

- How are communities in Mamelodi East affected by floods?
- What factors contribute to floods in communities in Mamelodi East?
- How can these contributing factors be reduced in your community?
- What can the community do to be better prepared for future floods?
- How can your school and learners work together with families and communities in reducing flood risks and develop adaptive strategies in the event of future floods?

The findings are presented in three sections. The first section presents the profile of the research participants. In the second section, the photos and narratives of the participants are presented, followed by the third section on the themes and sub-themes that emerged from the research data. The chapter ends with a summary.

## 4.2 Profile of the research participants

The three participants who joined the study were learners of Viva Independent School residing in Mamelodi East. The profiles of the participants summarised in Table 4.1 below indicate their age, sex, grade and the number of floods they have experienced. The participants are referred to as P1, P2 and P3 to protect their identity.

**Table 4.1: Profile of the research participants**

Participant	Age (years)	Sex	Grade	Number of floods experienced
P1	10	Female	4	4
P2	9	Male	4	1
P3	10	Male	5	2

Table 4.1 shows that two participants were 10 years old and one participant was nine years. Two participants were male and one female. One participant was in grade five and two participants were learners in grade four. All the participants have experienced at least one flood as the study criteria required. One participant experienced one flood, another participant encountered two floods while the other one experienced four floods.

### 4.3. Photos and narratives

This section presents the photo-voice of the three learners who participated in the study. The three participants shared a smartphone camera to take pictures. In total, the collective had twenty-six pictures. Participant 1 took eight pictures, Participant 2 took ten pictures and Participant 3 took eight pictures. Each participant selected three pictures of the photos they individually took on what they considered disaster risks in the community. Each participant's pictures are presented and discussed below as they narrated during the one-on-one interviews with the researcher. The researcher sent the photos from her phone to the laptop through Bluetooth and used a phone recorder to record all the interviews.

### 4.3.1. Participant 1 (P1)

#### Photo 1 (P1.1)



For Participant 1, the photo explains that houses that are close to the river and are poorly constructed are most susceptible to floods. She further explained that these types of houses are at risk as during floods people can be trapped in such houses resulting in their death. She narrated her view as follows:

P1: “I choose this picture because, if the rain, it rains, the water will be many after, and the water will get into this house and after the people will not get out.”

The participant stated that only a few people who are employed will manage to build proper houses using bricks. However, she said that many people cannot build with good materials as they are poor.

**Photo 2 (P1.2)**



The participant indicated that the road has potholes due to floods since flooding changes the condition of the road. She further noted that poor roads affect children and the community at large as public transport is disturbed, inhibiting children from reaching school as parents are reluctant to use their private cars during rainy seasons.

**Photo 3 (P1.3)**



The participant said that the white sacks filled with soil were deemed as “soil balance”. She explained that the “soil balance” is a sort of bridge which community members use to pass from one area to another. She further explained that it is not safe to use it because such pathways are dangerous considering that the soil balance cannot withstand too much rain. However, she was of the view that the community could work together to strengthen the pathway by adding more sacks on top of the existing ones.

#### 4.3.2. Participant 2 (P2)

##### Photo 1 (P2.1)



For Participant 2, the picture depicts a house that has been built using poor building materials and is notably situated near the river. He indicated that the house can easily be swept into the river affecting water flow in the bridge which can cause more flooding. In his words, the participant explained that,

“Houses they're next to the rivers when the floods come is the houses that, the first houses that the that the flood comes take them after they're gone, they're going to block the bridges after the water is going to stop it cannot move then it starts to be floods.”

The participant added that once the house is displaced people will not have places to stay. However, people continue to stay in such areas as they have nowhere else to

go. He also alluded that it is mainly poverty-stricken people staying in these kinds of houses as they cannot afford to buy better materials to build “nice” houses.

### Photo 2 (P2.2)



In this picture, the participant linked poor management of waste with water pollution. He explained that the risk of putting plastic in the river is that it causes water pollution which eventually affects the animals and fish in the river. He attributes such ill management of waste to people who do not take their litter to trucks that collect waste but throw garbage anywhere where it is convenient for them. In addition, polluted water can cause people to be sick as people in the village tend to collect water in the river when there is no water from the taps.

**Photo 3 (P2.3)**



The picture shows a bridge that is surrounded by litter. According to the participant, bridges can be adaptive strategies if they are well constructed to support the necessary flow of water. He added that littering not only inhibits the flow of water but causes water pollution affecting both people and animals as polluted water cannot be consumed. The participant said the following:

P2: “Because [dumped waste] will cause water pollution and will affect animals that stay in the river and it will affect us...because when there is no water you cannot go to the rivers and drink that water.”

#### **4.3.3. Participant 3 (P3)**

**Photo 1 (P3.1)**



In this photo, the participant highlighted two disaster risks. He said that littering and lack of proper bridges influence floods. According to the participant, he related both the rubbish and bridges to the flow of water in the river. The water flow is blocked by rubbish that has filled the river making it unsafe to use this bridge during rainy seasons. He further indicated that litter affects their health as people may end up being sick and die as the environment is not clean.

### Photo 2 (P3.2)



For the participant, the photo shows a road that has potholes all over. He mentioned that there is a link between floods and roads where poor roads cause floods. According to him, the floods cause more damage to the already damaged road. On the other hand, public transport such as taxis and buses utilised by the masses are affected as they may turn over and cause accidents resulting in mortality. The participant explained his view of the picture in the following manner:

P3: “It tells me about when, when the floods come, they just gonna cause more damage in the roads just gonna have a lot of holes. When buses and taxis come the buses are just gonna fall and these buses have kids or people or kids. The taxi come and just gonna fall and uhm kill people.”

The participant further explained that these roads negatively affect crime as they pose a risk to police vehicles slowing their motion which delays the arrival of police officers at the scene of crime.

**Photo 3 (P3.3)**



For the participant, this photo presents a house that is located on the river bank. The participant indicated that during floods the house is bound to fall into the river and there is a risk that people who are occupying the house will be in the house at that point hence some may die while others survive. He stated that the community and the municipality must work together to build better houses.

#### **4.4 Themes and sub-themes**

This section presents the four themes and sub-themes that emerged from the research data. The findings are verified by the direct voices of the participants and integrated with the literature. Table 4.2 outlines the themes and sub-themes that were developed from the findings.

**Table 4.2: Themes and sub-themes**

<b>Themes</b>	<b>Sub-themes</b>
<b>Theme 1</b> Factors contributing to floods	1.1 Air pollution 1.2 The location and structure of houses 1.3 Poor waste management 1.3.1 Land pollution 1.3.2 Water pollution

<b>Theme 2</b> Children's understanding of the consequences of floods	2.1 Diseases and death 2.2 Displacement and relocation 2.3 Possible emotional trauma 2.4 Increased crime risks 2.5 Transport challenges
<b>Theme 3</b> Strategies to prevent and mitigate floods in the community	3.1 Improve bridges and roads 3.2 Prevention of air and land pollution 3.3 Improve housing infrastructure
<b>Theme 4</b> The roles of stakeholders in DRR	4.1 The role of the community 4.2 The role of government 4.3 The role of the school 4.4 The role of children

#### 4.4.1 Theme 1: Factors contributing to floods

As presented in the pictures, the participants understand the causes of floods based on their everyday experiences in their community. They identified factors contributing to floods as air pollution, the location and construction of houses as well as poor waste management. These factors will next be discussed as sub-themes.

##### 4.4.1.1 Sub-theme 1.1: Air pollution

Participants indicated that air pollution is a disaster risk that contributes towards rapidly occurring natural disasters and in particular floods in their community. They were of the view that community members contribute to air pollution by burning household rubbish and by making fires when they have parties.

The participants articulated their views on air pollution as follows:

P2: *“...and when you burn rubbish, they cause the air pollution.”*

P3: *“...these people that just make a party and make fire, the fire is gonna just go up and make air pollution the next day the flood is gonna come.”*

Findings indicate that participants understand the link between air pollution and floods even though they might not fully comprehend the unfolding of the natural process. The findings on the link between air pollution and flooding corroborate with the Department of Environmental Affairs (n.d.:2) statement in its waste management booklet, stating that burning litter releases toxic gases that cause air pollution in the atmosphere and intensify global warming. In Mamelodi, many families rely on fire to prepare food. According to the World Health Organization (WHO) (2023a), people around the globe who use cow dung, wood or coal to make fire or as fuel in inefficient stoves, produce harmful household air pollution. Furthermore, in 2023 household air pollution led to approximately 3.2 million deaths including mortality of children below the age of five years (WHO, 2023a). South Africa does not only generate green gas emissions but it is highly vulnerable to the impact of climate change with a disproportionate effect, on the poor, particularly women and children (NDP, 2012:23).

#### **4.4.1.2 Sub-theme 1.2: The location and structure of houses**

The participants were of the view that the location and poor construction of houses pose a flooding risk to the community and are also dangerous to be occupied by people. They further indicated that families whose houses are situated close to the river are highly susceptible to floods as the house can be washed away which will cause them to be displaced.

P1: *“I’m seeing a house; I see the house that is not straight... that’s is not safe to stay at this house”.*

P2: *“This house is next to the river and when the floods come, the floods can take over their house and the houses just gonna fall in the river.”*

The findings are supported by Eligon, Mji and Lynsey (2022) stating that individuals settle anywhere they can find land even when it’s unsafe because they cannot afford to secure permanent stable housing. Literature indicates that families risk staying in disaster-prone areas to get access to opportunities such as jobs, schools, and health care (Patankar, 2016 cited in Winsemius, 2018:330), which further hamper children’s education. As findings have shown (see sub-theme 1.2), the location and structure of housing is a risk factor contributing to floods. However, participants and literature confirm that individuals stay in such areas as they are closer to opportunities. After the

2022 floods, residents of Mamelodi informal settlement started building again moving their shacks and erecting them on a higher location on the mountain (Mabona, 2022). Even though the municipality keeps warning them to not occupy land located close to the river, streams and flood lines (Mabona, 2022), residents indicated that they have nowhere to go as they come from rural areas (Mothiba, 2022). Furthermore, the need for economic opportunity attracts many individuals to the city and fragile coastal areas where there is much exposure to disasters (Greene & Greene, 2009:1018). In the case of this study, the fragile areas include poorly built houses on the riverbed.

Moreover, the houses are constructed from simple materials such as mud, wood and tin sheets (IFRC, 2022:3). The findings support the historical legacy of apartheid as Eligon et al. (2022) assert that, even in some planned communities the majority of black people still settle in neglected areas, on environmentally risky land.

Participants indicated that it is mostly the poor, underprivileged individuals who have nowhere else to go and those who are homeless who stay in informal settlements in poorly constructed houses and near rivers. They explained vulnerable people who live in these areas in the following words:

P1: *“The poor people.”*

P2: *“...People that they don't have places. They come here when they were not staying anywhere, after they start to do the houses because they want to stay.”*

The findings are corroborated by IFRC (2022:3), stating that in Durban, Kwa-Zulu Natal, a quarter of the city's poor residents stay in unplanned constructions in informal settlements which are situated on unoccupied land with low-quality materials. Studies by Eligon (2022) and Winsemius et al. (2018:330) confirm that poverty-stricken South Africans often dwell in informal settlements with fragile structures as these settlements are near to employment opportunities which are non-existent in their distant home areas. Several authors (Eligon et al., 2022; IFRC, 2022:3; Save the Children, 2007:3; Winsemius et al., 2018:3) point out that informal settlements are the hardest hit by floods as they are often built in lowland hills close to rivers or on steep slopes on places highly dangerous when floods occur as they have little or no infrastructure to protect them from such incidents. The South African government's failure to resolve the lifelong “housing crisis fuelled by poverty, unemployment and inequality” plays a vital

role in the effects of floods (Eligon et al., 2022). Protecting people from the consequences of floods entails addressing social issues as much as the environmental ones (Eligon et al., 2022). Participants understanding of the consequences of floods are discussed in theme two below.

#### **4.4.1.3 Sub-theme 1.3: Poor waste management**

Findings reveal that poor waste management is one of the contributing factors towards flooding. The participants showed that people's ill behaviour in disposing of waste is an environmental risk as poor management of waste leads to water pollution and land pollution.

##### **1.3.1 Land pollution**

The findings show that the community members throw garbage in all places where it is convenient for them, including in the rivers. Participants explained that people wait for a convenient time to dispose of their waste such as when they pass by the river when they leave their homes for work instead of dropping it for collection by municipality trucks. Participants shared their views in the following words:

P1: *"They throw waste everywhere."*

P2: *"...Because people are throwing rubbish anywhere that they want... when trucks of the dumping come, they do not take the rubbish to the trucks, they leave their rubbish after when they go to work, they take the rubbish and throw in the rivers."*

The findings are in line with the Department of Environmental Affairs (n.d.:3) statement affirming that littering occurs due to poor waste disposal: Poor waste disposal can be seen when "plastic packets, juice cartons, wrappers and fruit peels" are dumped everywhere, including all over the street or onto the ground in open spaces. Furthermore, littering is harmful to the environment and unsightly while other negative impacts include disrupting vegetation and blocking waterways leading to floods (Department of Environmental Affairs, n.d.:3).

### 1.3.2 Water pollution

The findings reveal that waste (including plastic) that is thrown into the river is bad for people, animals and fish. The participants indicated that children may get sick and water which is polluted by rubbish may cause death to animals and fish in the river.

P2: *“...When you put plastic in the river, it will cause water pollution and the animals, the fish in the river, they will die...when there is no water, when that taps has no water...you can go to the to the rivers and take water and drink. But when there's rubbish inside the river, when we drink that data will make you to be sick.”*

P3: *“...When garbage affects my family, sometimes my little brother might get sick.”*

The findings are supported by the Department of Environmental Affairs (n.d.:3) that waste can cause water pollution when it gets washed into streams and oceans and may end up being consumed by animals and people affecting their health. The participants explained that water is a necessity for all life including humans, fish and animals. In support, Hanslmeier (2011:4) states that water has direct and indirect effects on life since it is essential because all nature relies on water. The South African Constitution (RSA, 1996) notes that the ill management of waste can result in a violation of human rights to a safe environment that is not harmful to people's health and well-being. Participants' awareness of the risks caused by poor waste management shows that proper ways to manage waste should focus both on environmental justice as well as ecological justice. Environmental justice emphasises the current and future generations' rights to stay in a clean, healthy and safe environment (Hawkins, 2010:74), while ecological justice gives equal consideration to the natural and social environment (Norton, 2012:304). The Department of Environmental Affairs (n.d.:2) provides solutions to better manage waste through the 4Rs which entails reduce, reuse, recycle and recover. Reuse means finding ways to utilise waste again which humans usually dispose of; recycling refers to the rubbish that cannot be used while recovery means converting waste into resources (Department of Environmental Affairs, n.d.:10). Through proper waste management, both environmental justice and ecological justice can equally be taken in consideration.

#### **4.4.2 Theme 2: Children’s understanding of the consequences of floods**

The participants explained that floods have multiple consequences in their community that affect their lives. The findings show that individuals can experience possible emotional trauma, become sick or even die as a result of flooding. Furthermore, floods affect their physical environments, damaging homes and roads. The participants indicated that houses that are destroyed by floods can leave people displaced while others may be forced to relocate to other areas. On the other hand, damaged roads pose challenges to commuting. Furthermore, participants noted that floods pose an increased risk of crime. These findings will be further discussed in the following sub-themes.

##### **4.4.2.1 Sub-theme 2.1: Diseases and death**

Participants indicated that people’s health is affected by floods. They stated that no one is immune to sickness as both children and other family members can get sick amid floods. They pointed out that some sicknesses may eventually lead to death and that community members are to be blamed for their deaths because they are the ones who litter and cause air pollution which in turn, contribute to floods.

P3: *“...When the floods come other kids are gonna die... one of my family is gonna get sick.”*

P1: *“We will get sick.” “Then people will die and we will be blamed for their death as it will be said that we let them die.”*

Findings indicate that participants understand diseases and death could occur as a result of floods even though they might not fully comprehend the sources of those diseases and death. The pictures (see Photo 2, P2.2) depict ill management of waste which the participants related to water contamination. In theme one, sub-theme 1.3, participants indicated that people are responsible for land pollution and water pollution which potentially could lead to waterborne illnesses. These findings are supported by the United Nations stating that a lot of water sources are getting more contaminated (UN, 2021:1). Polluted water is responsible for the transmission of illnesses such as cholera, diarrhoea, dysentery and typhoid (WHO, 2023b), which are reported to be the

main causes of death among minors below the age of five years (UN, 2021:11). These waterborne diseases can be reduced by ensuring that clean drinking water is accessible to everyone (UN, 2021:11). UNICEF (2016:2) corroborates the findings that during a disaster minors and communities are faced with multiple threats including death, injuries and illnesses which are linked to poor water sanitation. In the case of this study, poor water sanitation could be a result of polluted water due to ill management of waste.

While the participants indicated that the community itself will be blamed for the deaths that occurred due to floods, Mothiba (2022) reported that the community blames the government when people lose their lives during flood disasters (Mothiba, 2022). Individuals die of drowning because of different factors during floods. Nikku (2015:602) expands on the factors that cause death during a disaster by referring to poor infrastructure such as schools, and community halls which might collapse and kill people. In the context of this study, strengthening resilience will contribute to effective DRR (Cannon, 2008:10), particularly infrastructure resilience as it comprises pipelines, roads and bridges (Terblanche et al., 2022:604).

#### **4.4.2.2 Sub-theme 2.2: Displacement and relocation**

The participants indicated that during floods families can lose everything as overflowing water may get into the house and destroy household items, including food supplies. As a result, families might be forced to move from that place. In such cases, some houses may be completely washed away leaving people with no places to go other than shelters. The findings are reflected in the following quotes:

P1: *“Some people could lose their homes... and can go to better shelter.”*

P2: *“Because when you're staying in this house (see photo P2.1) the broken house, sometimes when it's raining, the water gets in the house and you start to be wet, the food start to be wet after you going to be forced to, because you must move from there.”*

Findings demonstrate that floods have considerable effects on homes and individuals. These findings are supported by Ngcamu (2022:54) who expresses that the year 2022 is seen as a time of huge disaster, whereby two South African coastal provinces

experienced “catastrophic and unprecedented floods” leaving thousands of individuals displaced with no homes and forcing them to stay in shelters. The participants have noted such destruction as loss of homes and unmet basic needs which forces the community members to evacuate. This happened in the 2022 floods that took place in an informal settlement of Mamelodi, whereby residents mentioned that once it starts raining for more than a day, they get worried because in the previous floods, they have lost their furniture, valuables such as identity documents and academic qualifications (Mabona, 2022). There is mounting literature that after flooding there are people who stay in evacuation shelters who do not have anything, in some cases, they have even lost the physical land they occupied and have nowhere to go (IFRC, 2022:4).

Despite the findings showing that in Mamelodi floods occur frequently as evidenced by one of the participants (P1) who has already experienced four floods and that families will likely be homeless or require better shelter, and some might relocate, literature shows that Tshwane municipality is not prepared for disasters. In this regard, Mabona (2022) and Mahlokwane (2023) indicate that in 2022, the city of Tshwane failed to relocate residents of an informal settlement in Mamelodi who demanded that the municipality move them before another flood strikes. The city blames its failure to relocate residents at the expense of securing land (Mabona, 2022). Anwana and Oluwatobi (2023:14) emphasise that government land should be made available for human settlement to build quality reasonably priced houses, but finding land to relocate families who occupy spaces prone to floods is a great challenge.

#### **4.4.2.3 Sub-theme 2.3: Possible emotional trauma**

Participants indicated that some of the effects of floods include continuously thinking about the occasion whereby the participants resort to prayer so that when it rains it does not end up flooding. The constant thought of flooding causes emotional trauma, hence they resort to prayer. Participants added that there are feelings of fear when it rains as participants have worries that the river will be full and people will not be able to cross over to the next side is overwhelming. Participants’ emotions are captured in the following words:

P3: “Well I was going to think every day when I was going to pray when the when it rains, there cannot be floods.”

P1: *“It makes me scared because if the rain, rains too much the soil will go down and the river, it will be full and we won’t pass.”*

The findings of the study reveal that there is possible emotional trauma caused by floods, this is supported by Matlakala et al. (2021a:192) reporting that victims of floods can experience post-traumatic stress disorder, anxiety and depression. In addition, such trauma requires the provision of psychosocial services offered by social workers. However, Twigg (2015:101) believes that it is seldom that services rendered to people experiencing floods focus on the need for psychological support to deal with trauma since much assistance is focused on physical needs such as food, clothes, water and shelter. Nikku (2015:601) has a different view and highlights that social workers have been assisting needy and vulnerable people, including those amid natural disasters. The point is that there is no proper coordination of services including psychosocial services as the disaster management team does not collaborate with social workers since there is a tendency to evacuate people and leave them without means of support (Matlakala et al., 2021a:193). The need for collaboration is discussed in theme four in sub-section 4.3.2 where participants pointed out that collaboration goes together with outlining roles of different stakeholders.

#### **4.4.2.4 Sub-theme 2.4: Increased crime risks**

Participants saw a connection between crime and floods. They were of the view that people see an opportunity to commit crimes during floods as they come and steal and take what they want. The participants added that bad roads pose a challenge to the fight against crime as police vehicles cannot arrive in time when storms strike and risks of crime emerge and are unable to track down those who steal.

P2: *“Other people they love to steal when the floods come...they just gonna take whatever they want.”*

P3: *“This picture (photo P3.2, a road with potholes and not well paved) tells me when there is danger, when the police come, the police car will never arrive fast.”*

It is illustrated by the findings that participants understand the extent of the effects of floods on the community. Participants have shown that flooding does not only affect

people's emotional and somatic well-being but also the rate of crime, which was pointed out as stealing. According to the study's findings, some people tend to break the law during floods. Kwanga, Shabu and Adaaku (2017:43) confirm that there is a link between other human activities and floods as such activities intensify the communities' vulnerability and risk of floods (Kwanga et al., 2017:43). In the study, participants specified crime as stealing, however, literature expands on the nature of crimes stating that children are exposed to crimes such as abuse, exploitation and trafficking as they might be displaced and separated from guardians and support structures during floods (Twigg, 2015:101; UNICEF, 2016:2). Previous studies indicate that financial pressure and emotional stress caused by disasters could result in domestic violence against women (Twigg, 2015:91).

#### **4.4.2.5 Sub-theme 2.5: Transport challenges**

The participants indicated that poor road infrastructure due to floods causes disruption of transportation and may inhibit learners from commuting to and from school. This occurs because parents refuse to transport them to school due to poor road infrastructure and at times, vehicles may stuck in the middle of the street. The transport challenges were expressed as follows:

- P1: *“Because the road is not good, and my mother has a car and she don't want to come with me at school because of the road.”*
- P3: *“Sometimes when there is rain my neighbours go fetch one of the children at school and the cars starts to stuck in the middle of the road.”*

The disaster risk and vulnerability assessment report done by the City of Tshwane in the financial year 2019-2020, describes frequent risks of disasters such as sinkholes, floods and “transport incidents” (Terblanche, 2022:4). Participants pointed out the cyclic effect of transport incidents as the latter in their view can also be a consequence of floods. Findings show that floods affect both private vehicles and public transportation. Raising awareness of the risks of floods is a way of increasing the social resilience of the community (Cutter et al., 2008:603). Furthermore, social resilience can be enhanced by making disaster plans and sharing information on how to prepare for disasters (Cutter et al., 2008:603). In the case of this study, the participants noted that instead of using private vehicles, the community have an

alternative mode of transport, however, they have not explained alternative routes in the case of a flood disaster. The participants indicated that besides using private transport to get to school there is public transport such as busses and taxis. However, these transport modes can be hampered by poor road infrastructure and result in accidents where many people could lose their lives. The implications of mass transport on bad roads were expressed in the following words:

P1: *“It tells me when the floods came here, the road will be up and when the bus come, it will jump and jump going up and down.”*

P3: *“...When buses and taxis come the buses are just gonna fall and these buses have kids or people. The taxi come and just gonna fall and uhm kill people.”*

The findings illustrate those bad roads pose challenges to school and education. The participants described bad roads as roads with pot holes and no pavements. P3 narrated that damaged roads may be a cause of accidents resulting in loss of life (See Photo 2, P3.2). Save the Children (2009:7) explains that it is vital for children to remain in school because climate change-related matters are taught in school and the context of Mamelodi, children have the right to access basic education despite challenges including in the case of floods.

#### **4.4.3 Theme 3: Strategies to prevent and mitigate floods in the community**

In theme one the participants highlighted factors contributing to floods and in theme two they explained the consequences of floods. In the third theme, the participants expressed that there are measures that can be taken to prevent and mitigate floods and the consequences thereof. These measures include improving bridges and roads, and housing infrastructure, as well as prevention of air and land pollution. These strategies are discussed as sub-themes in the following sub-sections.

##### **4.4.3.1 Sub-theme 3.1: Improve bridges and roads**

The participants believe that improving bridges and roads can mitigate floods in the community. This can be done by securing funding to buy good building materials such as cement so that the community themselves can fix their road and build proper

bridges that can be used by both animals and people to cross over and transportation will be effective.

P2: *“We call our community and we take out money to buy a cement to build a nice bridge that cars can pass and people can pass and animals.”*

P3: *“They must fix the roads.”*

The findings show that good infrastructure such as roads and bridges is an important strategy for preventing and mitigating floods in their community. Furthermore, good infrastructure requires quality building materials for which the community have to raise funds. Driessen (2022) indicates that even though it is a prevailing fact that improving existing infrastructure can mitigate flooding, countless municipalities grapple to improve infrastructure because they struggle to attain maintenance budgets. About road infrastructure, pavement contributes much to municipal flooding as it cannot absorb water and runs off quickly (World Economic Forum (WEF), 2022). In the case of this study, the informal settlements do not even have pavements. Considering Photo 2 (P.1), Photo 3 (P1.3), Photo 3 (P2.3), Photo 1 (P3.1) and Photo 2 (P3.2), there are no proper roads and bridges. The community had to find alternative ways to erect their bridges and roads as the old tarred road is damaged which makes the community vulnerable and less resilient to floods. WEF (2022) supports the findings stating that cities that are resilient to floods are those that have well-designed and maintained infrastructure. According to the online article written by Lwandile (2021, n.p.), Tjeerd Driessen, who is an expert in flood resilience, suggests that as floods become recurrent, community participation and city planning are crucial “to reach that resilient stage”.

Cannon (2008:1) confirms the findings that communities are not passive victims but should be regarded as agents who can show resilience by overseeing their resources. Cannon’s view resonates with the findings which suggests that the informal settlement community of Mamelodi should be encouraged to contribute money to construct better roads and bridges for daily use by the community. WEF (2022) points out that it is challenging for the community on their own to take responsibility for flood prevention and mitigation. It is more than taking responsibility, the community is poor and does not have the means to participate as Cannon suggests. Thus, the community can

better minimise their challenge by partnering with other stakeholders such as the government, the school and children, who all have a role to play. The roles of DRR partners are discussed in theme 4.

#### **4.4.3.2 Sub-theme 3.2: Prevention of air and land pollution**

The findings show that preventing land pollution can be done by ensuring that people cease to dump waste like plastic in the river and also by removing waste that has already been thrown in the river. Participants explained that air pollution can be prevented by halting the burning of rubbish and making fires.

P1: *“We can make it, by telling people to stop putting the plastic inside the river.”*

P2: *“...go to the rivers and pick the rubbish so that cannot cause the floods and that they must stop burning things (rubbish) because they cause air pollution.”*

P3: *“They must not throw garbage in the river...we are just gonna tell people to not make fire.”*

It is evident from the findings that Mamelodi informal settlement is affected by land pollution and air pollution and that poor waste management is a major contributing factor to this pollution. Findings indicate that both individuals and households contribute to land pollution. The Department of Environmental Affairs (n.d.:2) points out waste trucks, companies and builders as contributors to land pollution. In line with the findings, Grozavu and Mihai (2018:6) report that communities contribute to “river plastic pollution” due to the lack of proper waste management strategies. The lack of proper ways to manage waste results in open dumping sites, drainage blockage and blocked rivers because of the garbage which in turn leads to flooding (Grozavu and Mihai, 2018:6). The findings have not alluded to the 4Rs which is an important strategy to prevention of land pollution. As described in sub-theme 1.3.2 (water pollution) the 4Rs stand for reduce, reuse, recycle and recover. When communities reduce, reuse, recycle and recover, issues related to land and air pollution can be prevented and save the government money to provide for other basic needs (Department of Environmental Affairs, n.d.:5). In addition to reducing pollution, the 4Rs creates job opportunities and

contributes to poverty reduction, saves landfill spaces, and preserves natural material as well as energy (Department of Environmental Affairs, n.d.:10).

The participants explained that making fire and burning waste causes air pollution. This finding is supported by the Department of Environmental Affairs (n.d., 5), claiming that fatal gases release the combustion of litter which causes air pollution. Igini (2022) indicates that air pollution can be reduced by the government by adopting several policies to regulate all industries causing pollution. The Paris Agreement (UN, 2015a) is intended to help nations reduce global warming to 1.5. Degrees Celsius, by regulating greenhouse gas emissions so that a peak is reached by 2030.

#### **4.4.3.3 Sub-theme 3.3: Improve housing infrastructure**

The participants suggested to prevent floods, the housing infrastructure must be of better quality. They were of the view that to improve the housing infrastructure individuals must change and renovate their houses, especially the broken houses. Participants' views are captured in the following words:

P2: *“The community must agree that you must move their [the] houses that are broken and put nice houses.”*

P3: *“The community they must make better houses.”*

The participants believe that changing and improving the housing infrastructure is a strategy to mitigate floods. Observing the houses from the pictures provided by the participants (see photos P1.1, P2.1 and P3.3), one can see that the houses are built with old corrugated iron sheets without any proper design or plan, evidenced by the skew and unstable houses. Moreover, the houses are close to the river, making the household more susceptible to floods. IFRC (2022:3) points out that in informal settlements, a lot of houses are constructed with poor building materials such as mud, tin sheets and wood. The increasing costs of materials make it difficult for families to afford quality building materials and as a result, they prioritise their basic needs over upgrading their informal settlements (Maina, Braimah, Frediani, Kyessi, Macarthy, Mwathunga, Oyalowo, Tarawally, Turay, & Uduku, 2023). While the participants were of the view that the community must take responsibility for improving their housing infrastructure, the Constitution of South Africa (1996) emphasises that “everyone has

the right to have access to adequate housing” and, that “the state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realization of this right”.

#### **4.4.4 Theme 4: The roles of stakeholders in DRR**

In this theme, participants described the necessary partnerships that they believed, when established and maintained, offer a pathway to effective DRR and adaptation. The participants asserted that various stakeholders have a role to play in preventing and mitigating the factors contributing to floods, addressing the consequences of floods, and devising strategies to prevent and mitigate floods in the community. The following sub-themes outline the mentioned stakeholders that have a role to play in DRR, which are the community, the school, the government, and the children.

##### **4.4.4.1 Sub-theme 4.1: The role of the community**

The participants indicated that the community can get involved in DRR by fundraising for materials to construct a better road. They further suggested that the community could engage in protests against the municipality to persuade them to build good road infrastructure. The participants articulated a community initiative versus the government’s responsibility as follows:

P1: *“We can call community; we mix the money and buy some cement and concrete and fix the road.”*

P3: *“They were just gonna tell people to strike to the municipality so we can build another bridge, strong bridge.”*

The findings on community mobilisation to raise funds and engage in protests are corroborated by Anwana and Oluwatobi (2023:15), who mention that community members in informal settlements have initiated ways and means to deal with floods as many of them are faced with infrastructure challenges. The community action finding is supported and extended by Nikku (2015:605) who suggests that it is crucial to engage residents in disaster policy development and implementation to help them get “technical and financial resources” and to strengthen their resilience. Community

resilience is promoted when residents can plan and prepare resources to succeed in an uncertain environment (Cai et al., 2018:15).

Breakfast, Nomarwayi and Dodd (2021:3) concur that residents who are not happy with their living circumstances plan protests and request amenities like roads, housing, water, education and jobs. Protests are not new to South Africa and to this day, the country experiences protests that are peaceful or filled with violence (Dassah, 2012:21). Such protests are normally due to the frustration of residents because of unmet promises by the government in office (Akinboade, Mokwena & Kinpack, 2013:466; Brown, 2017:3). According to Breakfast et al. (2021:3), the inability of the government to provide basic services have resulted in an upsurge of protests in many informal settlements. The participants have outlined the role of the government in DRR as will be discussed in sub-theme 4.2.

#### **4.4.4.2 Sub-theme 4.2: The role of government**

The participants stated that it is the responsibility of the government, particularly the local government, to construct road infrastructure and continue with the maintenance of those roads to ensure that they are in good condition to be used by the community and to ensure the safety of residents during floods. These sentiments are captured in the following quotes:

P1: *“The government. I'll call the government to come and fix the road and when they fix the road.”*

P3: *“The maspala (municipality) must fix all of these roads because when there is floods the road is not safe...and the community others they gonna come and they just fix the holes.”*

The local government plays a vital role in DRR as directed by the DMA (Botha et al., 2011). Although the findings show the expected physical efforts and role of the municipality in fixing road infrastructure to make the environment safe, several authors have expanded on the role of the government. First, one of the fundamental roles of the local government is to provide basic services such as housing, electricity, waste management, water and roads to every person, particularly the poor (Masiya, David & Mangai, 2019:23). Secondly, in addition to providing basic services such as roads,

Minujin, Delamonica, Davidziuk and Gonzalez (2006:483) further highlight safe living conditions (for instance, free from floods) as a responsibility of local government. As Nikku (2015:602) argues, a safe environment is necessary since it is poor infrastructure that causes death, not the disasters themselves. Thirdly, the involvement of the municipality is necessary for DRR as its engagement may influence the local government to fund community projects about DRR (Back et al., 2009:28). Lastly, the government constitutes disaster management teams with various role players like municipal officials, non-government organisations and volunteers (Ngcamu, 2022:58).

#### **4.4.4.3 Sub-theme 4.3: The role of the school**

The findings show that the main role of the school in DRR is to educate children and the community on solutions to better manage waste and provide pathways to maintain rivers. The participants saw a pertinent role for the school to initiate school projects where learners engage in cleaning the environment around the river.

P2: *“Us (children) we can ask the school that we must go and pick the rubbish around the river.”*

P3: *“The school can, can teach the community how to fix things like the rivers and picking papers.”*

In line with the findings, Save the Children (2009:7) indicates that climate change matters are taught in school which capacitates children to be more knowledgeable about climate change and related matters. Children are great contributors to DRR and adaptation, and have the capacity to strengthen the resilience of their community when offered the necessary information and skills improvement (Save the Children, 2015:7), resulting in action to encourage change (Back et al., 2009:33). In the case of this study, participant (P) 3 suggested that the school can involve not only the learners but the broader community in strategies to prevent and mitigate floods such as preventing littering (“picking [up] papers”, P3). Children easily adjust to new ideas and are open to learning, hence they are better positioned to influence behaviour change and promote climate resilient development (Save the Children, 2009:9). Twigg (2015:160) extends the role of the school, indicating that schools can be utilised as evacuation sites when disaster strikes, ensuring that both children and their families have a safe place to stay in the course of a disaster. It is important to work with children to promote

learning to bring about the required change in climate change and the case of this study, to implement effective DRR and adaptation. The role of the children is discussed in the next sub-theme.

#### **4.4.4.4 Sub-theme 4.4: The role of children**

The findings show that children can participate in DRR. They can teach their parents and other community members' better waste management tactics by telling them to stop littering especially around the river and to put waste in dustbins. Further, they can teach people the importance of using municipal waste collection services. The participants have indicated that through their "voice", they can engage with their parents, other community members and the local government in developing solutions for fixing roads and bridges and improving waste management.

P1: *"We (children) can teach them when we see them want[ing] to put a paper in the river, you say STOP, after you going to show how people put paper inside a dustbin."*

P2: *"I like to change, I will go to people tell them when the truck for rubbish comes, you must take the rubbish go to give them and when they go after we go to take the rubbish in the river."*

P3: *"I'd like to tell my parents or the community to come, to come and clean up this mess and the community must make, must fix the bridges...and I could tell the maspala (municipality) to come and fix the bridge...I'm just gonna tell community to come and make some good bridges so the flood cannot affect people or animals and I was gonna tell the maspala (municipality) to pick these papers and they must tell people to stop throwing these papers."*

Findings show that participants believe they are agents of change through their voice and participation. Save the Children (2015:7) agrees with the findings, stating that children are not inactive victims but rather "powerful agents of change" who need to be involved in everything, including the community, municipal, national and international spheres. The participants talked about influencing their own families, communities and local government to have better waste management techniques and

fixing roads and bridges. Back et al. (2009:7) reinforce the findings, asserting that it is necessary to engage children in making decisions, even when they are not from disaster-prone areas (Back et al., 2009:36) as they can make great contributions while their rights to participation are upheld (Save the Children, 2009:9). Children are important role players in DRR and adaptation. Save the Children (2009:1) emphasises that the strengths that children have are a valuable resource for their families, the broader community, and institutions.

#### **4.5 Summary**

Chapter Four presented and discussed the empirical findings of the study. It outlined the biographical information of the three participants about age, gender, school grade location and the number of years each participant experienced floods. Each participant's photo voices were obtained in a set of three selected photographs which in their view represented risks contributing to floods in the community. The findings were discussed in four themes that emerged from the data, which are, factors contributing to floods, children's understanding of the consequences of floods, strategies to prevent and mitigate floods in their community and the roles of stakeholders in DRR. Findings were supported by direct quotations from the participants and substantiated by relevant literature.

## CHAPTER FIVE: KEY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Introduction

Chapter Five is the final and concluding chapter of the study. First, it discusses how the goals and objectives of the study were achieved. The following section presents the key findings and conclusions from the study. The chapter ends with recommendations based on the key findings and conclusions of the study.

### 5.2 Goals and objectives

The goal of the study, *To determine the perspectives of children on DRR and adaptation concerning floods in Mamelodi East*, was attained through achieving the following objectives

#### **Objective 1: To explore how communities in Mamelodi East are affected by floods.**

The objective was discussed in the literature review in Chapter Two and the empirical findings in Chapter Four. In Chapter Two (see section 2.2.1), the researcher discussed climate change and floods and the several effects thereof on the community. Natural disasters such as floods have vast effects such as injury, illnesses and mortality, destruction of property and infrastructure, and environmental degradation while they also cause financial and social disturbances (Twigg, 2015:001). These effects are even worse for children as shown by UNICEF (2016:2) in the exception of death, children are at risk of being malnourished and psychologically harmed. In Chapter Four (see section 4.4.2, theme 2), participants indicated that floods affect the community of Mamelodi in various ways. It affects them directly by causing diseases and/or death due to sickness, leaving people with possible emotional trauma, and forcing people to relocate or be displaced (see sub-themes 2.1 - 2.3). The community is also indirectly affected by floods as it gives a breeding ground for crimes and affects transport (see sub-themes 2.4 - 2.5).

**Objective 2: To determine the factors that contribute to floods in communities in Mamelodi East.**

Objective two was achieved in Chapter Four (see section 4.4.1, theme one). Participants indicated that air pollution, the location and structure of houses, and poor waste management, which entails land pollution and water pollution, all contribute to the occurrence of floods in their community. In sub-section 4.4.1.3, sub-theme 1.3, the findings conceded that poor waste management leads to pollution, particularly water pollution, air pollution and land pollution. Participants highlighted that people tend to throw garbage everywhere including in the rivers which contributes to both land and water pollution (see sub-section 4.4.1.3, sub-theme 1.3.1) or burn the rubbish as an alternative way to manage waste instead of disposing of litter properly (see section 4.4.1.1, sub-theme 1.1). The findings show that houses that are built by using weak building materials and which are located close to the rivers are a disaster risk as such houses can easily be swept by the river (see section 4.4.1.2, sub-theme 1.2). In section 4.4.2, theme 2, the findings have shown how the above-mentioned factors contributing to floods exacerbate the consequences of floods in the community.

**Objective 3: To determine how these contributing factors can be reduced in Mamelodi East.**

This objective was discussed in Chapter Two (see section 2.4) and Chapter Four (see section 4.4.3, theme 3). In section 2.4 of the literature study it is pointed out that although the severity of natural disasters such as floods cannot be completely prevented, strategies can be put into place that can substantially reduce natural disasters such as floods as in the case of this study (UNDRR, 2017). Furthermore, improved social and environmental policies, engaging with communities, and disaster-resistant infrastructure are strategies for mitigation (UNDRR, 2017). The objective was also achieved in Chapter Four (see section 4.4.3, theme three), in which the empirical findings of the study indicated that well-constructed infrastructure such as bridges, roads and housing are good strategies to reduce floods (see section sub-themes 3.1 and 3.3). However, to secure the required construction materials for strong bridges and houses, the community needs funding (see sub-theme 3.1). The findings further reveal that one way to reduce floods is the prevention of land and air pollution (see section 4.4.3.2, sub-theme 3.2).

**Objective 4: To explore how communities in Mamelodi East can be better prepared for future floods.**

This objective was attained in Chapter Two (see section 2.4) and Chapter Four (see section 4.4.4, theme 4). The literature review indicated that community engagement is crucial for successful DRR preparation (Cannon, 2008:14). It was discussed that preparedness is considered as the community's efforts to decrease the risk of disasters and reduce the destruction at the family level (Atreya et al., 2017:428; Peng, Xu & Wang, 2019:469 in Ngcamu, 2022:55). The objective was also addressed in Chapter Four (see theme four) where the findings revealed that several stakeholders such as children, the community, the school, and the government have a role to play in DRR (sub-themes 4.1- 4.4). Furthermore, the findings outlined the respective roles of these stakeholders. The community's role includes fundraising to secure proper building materials and protesting to influence the government's involvement in constructing disaster-resistant infrastructure (see section 4.4.4.1, sub-theme 4.1). The role of the government is to ensure communities have good infrastructure (see section 4.4.4.1, sub-theme 4.2), while the role of the school in disaster preparedness is to engage both children and the community through educational activities, to enlighten them on better ways to manage waste and provide pathways to maintain rivers (see section 4.4.4.1, sub-theme 4.3). Literature verified that children are knowledgeable about climate-related matters as they are taught in school and are open to learning new things, hence they are in a good position to influence behaviour change (Save the Children, 2009:7, 9). The findings indicated that through their voice, children can teach their own families about better ways of managing waste instead of using methods that contribute to air, water and land pollution (see section 4.4.4.1, sub-theme 4.4). By participating in local government, children can assist in providing solutions to fix and maintain road infrastructure. Their strengths can be utilised as resources in the provision of solutions in various institutions (Save the Children, 2009:1).

**Objective 5: To make recommendations to enhance children's participation in DRR and adaptation.**

This objective is discussed in this chapter in sub-section 5.3 below.

### 5.3. Key findings and conclusions

The key findings and conclusions drawn from the study are discussed in this section by presenting each finding separately with its associated conclusion.

- Findings reveal that participants are aware of and understand the factors contributing to floods in their community. The participants identified air pollution, the location and structure of houses, poor waste management, land pollution and water pollution as factors contributing to floods in their community. Furthermore, findings show that these contributing factors are severely influenced by human activity and behaviour as their ill management of waste is the source of air pollution, land pollution and water pollution.
  - It can be concluded that factors that contribute to floods in Mamelodi East can be mitigated as they are primarily caused by human activity and behaviour. While waste management in the community contributes to air, land and water pollution, it is important to recognise the structural injustices and lack of service delivery in many communities that do not have efficient ways to manage their waste. People who are poor and marginalised tend to reside in areas where they are more susceptible to floods, increasing the chances of being affected by recurring floods.
- The findings show that floods affect the community in various ways. Participants described the consequences of floods based on their personal experiences which include diseases and death, displacement and relocation, possible emotional trauma, increased crime risks and transport challenges. In addition, the participant's education is also affected negatively because of transport challenges caused by floods, these minors are unable to go to school during flooding.
  - Based on the findings, the consequences of floods put the future of children at risk because they are the most affected population. When floods strike children are exposed to illnesses such as cholera, diarrhoea, dysentery and typhoid, they can lose their lives and experience emotional trauma (WHO, 2023). These factors can be mitigated. It can thus be concluded that there is a need to focus more on DRR and mitigation and as a result, less on adaptation. It can be deduced that achieving sustainable development is far from being reached as the lives of children are compromised in current and future generations. In conclusion, as a vulnerable group, children are the

greatest affected by floods; thus it is imperative to ensure that they are active participants to create sustainable measures for DRR and to mitigate floods and the consequences thereof.

- The findings reveal that several strategies can be put in place to prevent and mitigate floods in the community. First, the community must work together to prevent and reduce air and land pollution by employing proper waste management strategies. Secondly, participants believe that improving bridges and roads can mitigate floods in the community but it requires money. Infrastructure improvement is mainly the responsibility of government but municipalities struggle to budget for the maintenance of roads, bridges and housing infrastructure (World Economic Forum (WEF), 2022). The findings of the study suggest that the community should not be bystanders but must work together to raise funds to buy good building materials such as cement so that the community themselves can fix their roads and build proper bridges that can be used by both animals and people to cross the river and to ensure that transportation will be effective. The third strategy is the improvement of housing. The participants suggested that the community take responsibility for their housing challenges although the Constitution of South Africa (1996) states that the government must provide resources to secure quality housing as it is a basic right for all citizens to have access to housing. Findings also show that lack of money is a driving force for people who tend to build poorly structured houses and stay in areas prone to floods.
  - It can be concluded that with adequate finances and financial opportunities, the community can implement strategies that can prevent and mitigate floods in the community. With ample resources, they can improve road and housing infrastructure. Stable employment can offer people more choices of location and improved housing that they can reside in. However, this requires collaboration with the government and other stakeholders in DRR as the community itself does not have the necessary financial resources to do it by itself.
- The findings demonstrate that successful DRR depends on various stakeholders. The community, the school, the government and even children have a part to play in DRR. The findings highlight the role of the community in raising funds to construct improved roads and bridges as indicated in the previous key finding, and

to hold the government accountable for the provision of infrastructure by engaging in protests. The role of the school is to focus on educating learners on how to prevent and mitigate contributing factors to floods. The role of government in DRR is to develop and maintain good infrastructure that would support flood resilience. Findings show that children are eager to work together with parents and the municipality to provide sustainable solutions for the improvement of road infrastructure and waste management and this can be achieved through their participation where they voice out their views regarding DRR and mitigation. The participants said that they would tell their parents and the municipality to fix bad roads and bridges for the benefit of animals, the children and the overall community.

- In conclusion, participants are aware that DRR is not only the responsibility of the national government but also the community, the local government, and the school and they have a role to play in developing strategies to prevent and mitigate floods. Children have the capacity and skills required to contribute to successful DRR and mitigation when they are provided with opportunities to do so.

#### **5.4 Recommendations**

Based on the research findings and conclusions, the following recommendations are proposed to stimulate child participation in DRR and adaptation in Mamelodi.

- **Enhancing children's participation**

Findings indicate that participants see a role for themselves in DRR and mitigation of floods and can participate in making decisions on matters that affect their lives. Their participation can be guided by the Sendai Framework (UN, 2015d) and the SDG targets and indicators of the 2030 Agenda (UN, 2015b) as both are in support of children's participation in climate change and DRR. However, enhancing the participation of children in policy development and implementation to reduce flooding risks in Mamelodi East, should be advanced by the local government which should be facilitated by reviewing the DMA to ensure that there is a clear section on the role of children in DRR and mitigation of disasters, such as floods. Children should be offered

relevant platforms that encourage their participation. Children's parliament is an example that can be duplicated in municipalities. Other opportunities include school debates on DRR, and children taking responsibility in community cleaning campaigns. Since social work plays a vital role in giving a voice to the voiceless and marginalised groups (Matlakala et al., 2021b:189), amidst other stakeholders, social workers should be in the forefront ensuring children are engaged in DRR and adaptation.

- **Inclusion of DRR in education and training**

Findings show that the school is a vital stakeholder in DRR and their main role is DRR education for children and community members. Viva Independent School is already committed to education on the environment and climate change. It is recommended that Viva Independent School build on the findings of the study to prepare the learners in the school to engage in DRR, mitigation and adaptation that they extend to their families and broader communities. Furthermore, Viva Independent School can reach out to other schools and learners in the area to strengthen DRR and adaptation in Mamelodi East and the broader community. Findings are aligned with the observation of Save the Children (2009:9) that children are receptive to new information and are willing to learn and hence they are better positioned to encourage behaviour change and climate-resilient development. Viva Independent School can thus play a facilitating role in connecting learners and their families with other stakeholders relevant to DRR, enhancing children's participation reducing risks for floods, and engaging in adaptation strategies. Overall, DRR education for learners will be transferred to their families and benefit the community at large to be better prepared for and mitigate floods. Furthermore, child participation can contribute to finding sustainable solutions for DRR adaptation strategies for floods in the community.

- **Engaging parents and caregivers**

The findings of the study highlight that the community particularly parents and caregivers, play a significant role in DRR and mitigation of floods. Information on DRR and mitigation should be made available to parents and caregivers through community meetings, municipal meetings and school meetings to support and engage them in

strengthening children's awareness about DRR and adaptive strategies for floods. Children's first socialisation environment is within the family by interacting with caregivers and parents; thus DRR awareness offers adults opportunities to learn and interact with their children (Butcher et al., 2009:17). Save the Children (2015:08) emphasises that enhancing child participation should include strengthening caregivers by capacitating them to focus on children's basic needs and skills.

- **Raising community awareness of pollution and floods**

The findings show that pollution in Mamelodi East occurs as a result of human activity and behaviour. Viva Foundation can lead activities focused on behaviour change as it already works closely with local communities, government agencies, and other non-profit organisations to ensure that programmes are put in place that address the needs of vulnerable populations such as children. In support of the Viva Independent School that can reach out to other schools in the area, the foundation can explore how non-government organisations and the government can invest resources in joint efforts that will create and strengthen community campaigns on educating the community about DRR, mitigation and adaptation for better futures. These campaigns must be ongoing while behaviour change is monitored. With sufficient information and resources, the community can be better able to reduce the factors contributing to floods and also be better prepared for future floods. It is also recommended that structural injustices that cause people to contribute to pollution be taken up by the community with the local government. Furthermore, behaviours contributing to intentional pollution and environmental degradation should be held accountable to participate in community cleaning-up campaigns.

- **Improved services from the government**

The findings reveal how insufficient infrastructure such as bad roads poorly constructed bridges and houses, and improper waste management relate to the causes and consequences of floods. The findings further indicate that it is the role of the municipality to provide good roads and bridges, quality houses and waste disposal services. The government through the municipality is obliged by section 152 of the

Constitution (RSA, 1996) to provide services such as housing, roads, sanitation and waste removal to the community. It is recommended that the municipality put in place measures and strategies that will ensure that people are accommodated in quality houses built in safe environments with proper road infrastructure, water and sanitation, schools and proper waste management methods. Failure to do so should lead to action by the community and stakeholders to hold local government and service delivery organisations accountable on a public platform.

- **Establishing and maintaining stakeholders in DRR partnerships**

The findings show that participants fully comprehend the point that DRR requires efforts and responsibilities from different stakeholders, including the community, the school, the local government and the children. This requires establishing partnerships with NPOs and local government departments for the successful implementation of DRR. It is recommended that teachers and social workers involved at Viva Independent School join such DRR partnerships. Social workers are responsible for child protection and building partnerships which is an important theme of the developmental approach. As the findings of the study show, children see themselves as partners among other stakeholders involved in DRR. They believe they can participate in DRR by learning skills about DRR, transferring those skills to their family and their community, and by physically being involved in decision-making in local government and community structures. The Viva Independent School can create platforms for children to participate as partners in DRR of floods in the community. Ngcamu (2022:58) states that it is the role of the government to create disaster management teams with various role players. It is therefore recommended that the disaster management teams in government ensure the inclusion of children. It includes influencing policy and review of the DMA to refine the role and responsibilities of government, and the role of other stakeholders such as non-government organisations like Viva Foundation, educational facilities, the community and children. It is further recommended that the local municipality, the school and social workers develop child-friendly action plans that speak directly to the roles and needs of children in disasters such as floods.

- Strengthen the role of social workers in DRR

Findings show that it is necessary to include different stakeholders in DRR. Although the participants did not mention social workers, the link between poverty and DRR emphasises the important role social work can play in DRR. Social workers, as natural advocates for human rights, are well-positioned to contribute to DRR efforts. Social workers also have a key role in educating people about the causes and impacts of climate change (Mpambela & Mabvurira, 2017:34), as well as working towards enhancing the community's adaptation and resilience in the face of climate change (Nyahunda, Matlakala & Makhubele, 2019:178). Social workers play a pivotal part in DRR and adaptation as their implementation of the developmental approach can assist in achieving all the other recommendations the researcher made. Through developmental social work, social workers should be effectively trained to enhance children's participation in DRR, establish and maintain relationships with stakeholders, ensure that parents and caregivers are informed and educated about DRR and adaptation, and promote human rights by advocating for the integration of DRR education into mainstream basic education.

- **Future research**

Influenced by climate change, the occurrence of natural disasters such as floods is becoming more severe and frequent, demanding innovative and sustainable solutions. The findings established that participants understand DRR and adaptation as they were able to identify factors contributing to floods, state the effects of floods and suggest some solutions to prevent and mitigate floods. The researcher suggests that learners in Viva Independent School be empowered to become change agents in their community while Viva Foundation contributes to creating climate-smart approaches for DRR and mitigation. This can be achieved, firstly by sharing the research findings with other learners in the school and encouraging them to make their observations on environmental risks for floods through photo voicing. Secondly, the school could engage learners and work with other stakeholders, including local social workers, to analyse the data and develop procedures for working with children, their families, and the community to develop resilience in DRR and develop mitigation strategies for flooding. The project can include continued action research by social workers to

explore whether children's knowledge and voices are being used to drive child participation, leading to actions that contribute to social transformation. Lastly, the researcher recommends that social work research be conducted to explore the active participation of children in policy development and implementation of DRR and mitigation. Above all, it is recommended that social work education and training institutions make a deliberate effort to ensure that social workers are trained to actively promote child participation in DRR and adaptation.

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# Appendices

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## Annexure A

### Interview Schedule

#### SECTION A: BIOGRAPHICAL INFORMATION

1. How old are you?

8	9	10	11	12
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2. How do you describe your sex?

Male	Female	Other	Prefer not to say
------	--------	-------	-------------------

3. In what school grade are you?

3	4	5	6	7
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In what community do you live? .....

How many floods have you and your family experienced in Mamelodi East? .....

#### SECTION B: QUESTIONS ON TOPIC

##### Photos on environmental risks in the community

1. Why did you choose the specific photo to discuss?

2. What is happening in the photo?

- What story does the photo tell you about floods and possible risks for floods?
- Who is contributing to what you see in the photo?
- What would you like to change in the community when you look at the photo? Why do you say so?
- How does what you see in the photo influence you and your family's wellbeing?
- Who should do something about what you see in the photo?
- What can you / your school / family / community do to change what you see in the photo?
- How do you feel when you look at the photo?
- What in the photo make you feel scared or worried?
- What does the photo say about your community and living conditions?

3. How is your family and community affected by floods?

- Homeless / stranded
- Injuries

- Drowning – loved ones; pet(s); livestock
- Health challenges – waterborne infections
- Power breaks
- Sewage spill
- Polluted water
- Destruction of crops / food gardens
- Financial burdens
- Infrastructure collapse – no roads to access school; transport; shops

**4. What factors contribute to floods in your community?**

- Overflowed riverbanks
- Dumping of rubbish in river
- Climate change
- Poor roads and draining systems
- Poor rebuilding of houses, infrastructure post floods.

**5. How can risk factors for floods be reduced in your community?**

- Develop proper infrastructure – roads; draining systems
- Secure land for safe housing construction
- Evacuate / move to higher ground / shelter
- Turning of gas and electricity power to avoid electrocution
- Support neighbours to evacuate
- Collaborate with role players in the community / government / NGO
- Address poverty and inequalities
- Access to clean tap water
- Adequate sewerage systems / toilets
- No hanging power lines
- Removal of dangerous waste / rubbish
- No crossing of rivers / walking across flooded roads

**6. What strategies do your family and community use or could use to recover from floods and to be better prepared for future floods?**

- Have a flood and evacuation plan.
- Develop pathways for water run-offs.
- Built back better for sustainability.
- Engage local expertise and strengths.
- Stay informed and share information.
- Reduce poverty and unemployment.
- Develop social networks / relationships in strengthening the community.
- Plan access to emergency water supply.

**7. How can your school and learners work together with families and communities in reducing risks and developing adaptation strategies to cope and recover?**

- School-based initiatives
- Inter-sectoral collaboration
- Support and capacity building
- Child participant and development of agency

## Annexure B



### Faculty of Humanities

Fakulteit Geesteswetenskappe  
Lefapha la Bomotha



20 July 2023

Dear Ms IS Baloyi

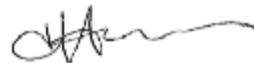
**Project Title:** Children's perspectives on disaster risk reduction and adaptation: The case of floods in Mamelodi East  
**Researcher:** Ms IS Baloyi  
**Supervisor(s):** Prof A Lombard  
**Department:** Social Work and Criminology  
**Reference number:** 10312103 (HUM013/0823)  
**Degree:** Masters

I have pleasure in informing you that the above application was **approved** by the Research Ethics Committee on 6 July 2023. Please note that before research can commence all other approvals must have been received.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should the actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

We wish you success with the project.

Sincerely,



**Prof Karen Harris**  
**Chair: Research Ethics Committee**  
**Faculty of Humanities**  
**UNIVERSITY OF PRETORIA**  
**e-mail: tracey.andrew@up.ac.za**

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**Research Ethics Committee Members:** Prof KL Harris (Chair); Mr A Lopez; Dr Avim de Uuen; Dr Aulos Santos; Dr Fagubara; Ms KI Govender-Andrew; Dr L Johnson; Dr D King; Prof D Mokoena; Mr A Nkomo; Dr L Osofo; Dr C Parlinghi; Prof D Lombard; Prof M Sosa; Prof F Talbot; Ms B Mkhabela

Room 7-27, Humanities Building, University of Pretoria, Private Bag X20, 1 lefeld 0028, South Africa  
Tel: +27 (0)12 420 4853 | Fax: +27 (0)12 420 4608 | Email: pgrhumanities@up.ac.za | www.up.ac.za/faculty-of-humanities

## Annexure C



### Faculty of Humanities

Fakulteit Geesteswetenskappe  
Lefapha la Bomotheo



10 June 2023

Researcher: Ikanyeng Baloyi

Tel: 0726804002

Email: [ikanyengsbaloyi@gmail.com](mailto:ikanyengsbaloyi@gmail.com)

Supervisor: Prof A Lombard

Tel: 012 420 2325 / 2030

Email: [antoINETTE.lombard@up.ac.za](mailto:antoINETTE.lombard@up.ac.za)

## CHILD ASSENT



Hello

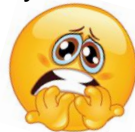
My name is Ikanyeng Baloyi I am a postgraduate student in the Department of Social Work & Criminology at the University of Pretoria. I am doing research on what children see as environmental risks for floods in their community and how these risks can be reduced. I invite you to participate in the study. I am interested to hear what you think can be done to reduce environmental risks for floods in the community and how these risks can be reduced to prevent floods or if it occurs, to cause less harm to people and their belongings. I work with other students in my class who, like me, believe that children are important to listen to and that they have many ideas to share to make the world and the communities where they live a better place. I invite you to participate in the study because I believe you have ideas to share on how you see disaster risks for floods in your community and what you think could be done to reduce the risks and cause less harm if a flood happens. I would also like to hear how you think children, their families and communities can work together to help reduce the environmental risks for floods and develop ways to cope with floods when they happen.



### **What to expect?**

If you agree to participate in the study, you will be prepared on how to take good pictures with a mobile phone on the study topic. You will be expected to join two other learners and take pictures around the school on what you see as contributing factors to floods and how these factors can be reduced. This will take about one hour. You will take more or less 20 pictures and then you will choose three (3) of those pictures to discuss with the researcher and tell her what the picture means. The discussion will take place at the school and will be about 30 minutes. You will also join two other learners in a small group to discuss the findings of the photos with the researcher. The session will be about one hour and will take place at the school. With your permission, I will be recording our discussion so that I can make sure that I captured all the information that you have shared with me. I will type the recorded discussion and if you want to you can see what I have written down; you can read it to let me know if you are happy with what we have discussed and if you wanted to add or change anything. I will include the pictures that you have selected in my research report.

### **Is there anything to be afraid of?**



There is no reason to be afraid to join the study because there will be no intended harm done to you. I understand that it may be hard for you to discuss your pictures and experiences of floods in your community as it may trigger unpleasant memories of floods that make you feel uncomfortable. After we have discussed the pictures, I will give you an opportunity to say how you have experienced the discussion and your participation. If you feel upset or saddened by discussing floods and environmental risks for floods and you would like to talk more about it, I will refer you to a social worker with whom you can discuss your feelings and experiences.

### **Are there any benefits for joining the study?**

You will not receive any gifts for your participation but if you agree to participate in this study, you will help to make sure that children's views on floods and how to reduce them are heard and considered when decisions on policy changes to manage risks for floods are made. Your views will assist me to learn how children, their families, and the community can work together in reducing risks for floods and finding ways to cope with floods when they happen.



### What rights do I have?



Participation is voluntary. This means that even though your parents will have to agree for you to participate in the study, you have a choice to say whether you want to be part of the study or not. If you join the study, you are allowed to stop participating at any point if you are not comfortable to continue as participant and it will not affect you in any way, not at the school or personally. Furthermore, if you withdraw from the study, you do not have to give any reason for your decision. If the researcher asks you any questions during the interview that you do not want to answer, you do not have to do so.



### Who will know that I joined the study?

Your parent(s) or guardian(s) will have to give permission for you to participate in the study and they will thus know that you are part of the study. Various people at your school, including your teacher and other learners will know that you participate in the study. Only you and the researcher will know what photos you have selected and discussed with her. I will write a report on the research findings of the study for the university. Your personal details and those of the other children will not be included in the report. You can choose a nickname that I can use in the research report. The findings will be presented in a way that you will not be identified or linked to any of the information that I have written up in the research report. All the information regarding the study will be stored in secured files for 10 years in the Department of Social Work & Criminology at the University of Pretoria. If the information that you shared is used again, it will only be for purposes of research.

### Do you have any questions to ask about the study?



You can contact me on my mobile number at 072 680 4002 or send me an email at [ikanyengsbaloyi@gmail.com](mailto:ikanyengsbaloyi@gmail.com).

**Would you like to join the study?**



Yes  I would like to participate in the study.



No  I would not like to participate in the study.

If you would like to join the study, you can write your name and today's date below.  
You will get a copy of this letter.

\_\_\_\_\_  
Child's name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of researcher

\_\_\_\_\_  
Date

## Annexure D



### Faculty of Humanities

Fakulteit Geesteswetenskappe  
Lefapha la Bomotheo



08 June 2023

**Researcher:** Ikanyeng Baloyi

**Tel:** 072 680 4002

**E-mail:** [ikanyengsbaloyi@gmail.com](mailto:ikanyengsbaloyi@gmail.com)

**Research supervisor:** Prof A Lombard

**Tel:** 012 420 2325 / 2030

**Email:** [antoINETTE.lombard@up.ac.za](mailto:antoINETTE.lombard@up.ac.za)

## INFORMED CONSENT: PARENTS

### 1. Title of the study

Children's perspectives on disaster risk reduction and adaptation: The case of floods in Mamelodi East

### 2. Goal of the study

To determine the perspectives of children on Disaster Risk Reduction and adaptation in relation to floods in Mamelodi East.

### 3. Procedures

Your child has been invited to participate in the abovementioned study. The study will be conducted by master's degree students in social work from the University of Pretoria. The eight students will each interview 3 learners during the study. In addition to your child's assent to participate in the study, your permission is required to allow him/her to participate. Your child will be prepared on how to take good pictures with a mobile phone during the study. He/she will be asked to walk around in the community surrounding the school with two other learners, the teacher and the researcher to take pictures around the community that depict his/her perspectives regarding risks for floods and possible ways to reduce these risks. This will take approximately one hour. The taken pictures will be downloaded on the researcher's laptop and your child will choose any three of them to discuss with the researcher. When the individual learner discussions have taken place, the researcher will have a discussion with the three learners in a group session of about

one hour. In case of unforeseen circumstances such as bad weather, the photo taking event will be cancelled two hours before hand. The school principal will give directions in this regard. The discussions will all take place at the school.

To ensure that all the participant views are heard, the interviews will be tape recorded with the permission of the children. The recordings will be transcribed as part of data analysis. Only the researcher and the study supervisor will have access to the recordings and transcripts which will ultimately be stored in a secure place by the University of Pretoria for a period of 10 years. If data is used again, it will only be for research purposes.

Findings of the study will be shared with all the learners and teachers in the school to explore how the school and learners can become further engaged in reducing risks for floods in the community.

#### **4. Risks and discomforts**

The researcher does not foresee any risks or psychological harm to children participating in the study. However, in order to ensure the children's physical safety, they will be accompanied by a teacher and the researcher during the picture-taking stage. The researcher will have a debriefing session with the children after the pictures have been taken as well as after the focus-group discussions. In cases where children feel upset to talk about the floods and need counselling, they will be referred to a social worker for consultation without any costs involved.

#### **5. Benefits**

The children will not receive any compensation for participating in the study. The study will, however, benefit them indirectly as they will get an opportunity to have their voices heard on an issue that affects them, their families, and the community. Their views will contribute to knowledge on risks for floods and how to adapt and manage these risks. The research findings could possibly influence policy development on managing environmental risks for floods and how to reduce these risks.

#### **6. Participants' rights**

Participation in the study is voluntary and your child has the right to indicate whether he/she wants to participate in the study or not. Furthermore, he/she may also withdraw from the study at any time without any consequences to him/her at school or in any other way. Your child also has the right to refuse to answer any question that the researcher asks if he/she does not want to.

#### **7. Confidentiality and anonymity**

Information collected in the study will be treated with confidentiality and the names of the children who participated in the study will not appear in the research report or the scientific journal in which the results will be published. Findings will be presented in such a way that readers will not be able to identify the children.

## 8. Person to contact

If parents have questions or concerns relating to the study, they may contact the researcher on 072 680 4002 or email her at: [ikanyengsbaloyi@gmail.com](mailto:ikanyengsbaloyi@gmail.com)

### Declaration

I, ....., the parent / guardian of ..... (child's name and surname) understand the above and voluntarily consent to my child's participation in this study. I understand what the study is about as well as why and how it is being conducted.

-----

Date

-----

Place

-----

Parent's signature

-----

Date

-----

Place

-----

Researcher's signature

## Annexure E



### Viva Foundation of South Africa

Postnet Suite 8, Private Bag X 1  
The Willows. 0041 RSA

**Mamelodi Campus:**  
371 Moshumi Street  
Alaska Informal Settlement Ext. 22  
Mamelodi East 0122

**Refilwe Campus:**  
Portion 8 Louwsbaken, Cullinan 1000

Tel.: +27 (0)79 635 2964  
Email: [info@vivafoundation.life](mailto:info@vivafoundation.life)  
SCHOOL EMIS: 700401010

Our Ref: Meleney B. Kriel  
Tel. +27 79 954 4426  
E-mail: [meleney@vivafoundation.life](mailto:meleney@vivafoundation.life)

13 June 2023

To:  
Professor A Lombard  
Dept. of Social Work and Criminology  
University of Pretoria  
Tel: (012) 420-2325  
E-mail: [antoinette.lombard@up.ac.za](mailto:antoinette.lombard@up.ac.za)

Dear Professor Lombard

#### Re. Permission to conduct research with learners from Viva Foundation School

On behalf of the stakeholders, faculty, and beneficiaries of the Viva Foundation's independent school in the Alaska Informal Settlement, Mamelodi East, I express our willingness to accommodate the MSW Social Development & Policy students with a research site at our school and assist the research team with facilitation of activities in the community for their research on "*Children's perspectives on disaster risk reduction and adaptation: The case of floods in Mamelodi East.*"

We understand the scope of the research and activities namely that the research students from your department, will each conduct an independent study with three learners from our school, each in the age category of 8-12/13 years. We will be able and willing to assist and collaborate, with the researchers, in the data collection method and other related activities in any way possible.

**The Viva Foundation of South Africa**  
Registration Nr. PBO 930024128 & NPO Nr. 094-301

We acknowledge that participation in the study will be voluntary, and parents will be asked to give informed consent that their child may participate in the study.

In the light of the participatory Action Research approach of the study, we further acknowledge that the researchers, their supervisor and the learners of our school, will be co-researchers in the study and will participate in data analyses, the drawing of findings and conclusions and making recommendations from the study. We avail ourselves to assist and accommodate the participants for the duration of the study and possible follow-up visits and activities thereafter.

It is a privilege for the Viva Foundation to be granted the opportunity to be involved in this valuable study and I am confident that the outcome will be of ultimate benefit to our school, its learners and the community of the Alaska Informal Settlement, Mamelodi East and other similar communities.

Best regards



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**Annexure F**

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PHD IN ENGLISH (UNAM), M.A. IN ENGLISH STUDIES (UNAM), BA HONOURS IN ENGLISH (UZ)

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12 August 2024

To whom it may concern

**LANGUAGE EDITING – IKANYENG STEPHINAH BALOYI**

This letter confirms that the master's thesis, *Children's Perspectives on Disaster Risk Reduction and Adaptation: The Case of Floods in Mamelodi East* for Ikanyeng Stephinah Baloyi, student number 10312103, was submitted to me for language editing.

The thesis was professionally edited, track changes and suggestions were made in the document which if followed by Ikanyeng Stephinah Baloyi, would result in a thesis with high-standard English.

Yours faithfully



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Dr. Coletta Kandemiri  
PHD IN ENGLISH (UNAM)  
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