



**SELINUS UNIVERSITY**  
OF SCIENCES AND LITERATURE

**A CRITICAL REVIEW OF POLICIES, PRACTICES AND  
CHALLENGES IN FLOOD DISASTER MANAGEMENT IN  
MALAWI. A CASE OF THE LOWER SHIRE VALLEY**

By Lawson Bennet Kirk Kasamale

Supervised by  
Dr. Salvatore Fava PhD

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## **CHAPTER 1**

### **INTRODUCTION**

Malawi is a small, narrow, landlocked country in sub-Saharan Africa. It shares boundaries with Zambia in the west, Mozambique in the east, south and south-west and Tanzania in the north. It has an area of 118 484 square kilometres, of which 94 276 square kilometres is land and the remainder is water. The major water body in the country is Lake Malawi, which is to the southernmost of the African Rift Valley and has a total surface area of more than 30 000 square kilometres.(The Commonwealth, n.d.).

Malawi is a country blessed with an abundance of fresh water, comprising rivers and lakes. Lake Malawi is the largest body of water amongst the five in the country. It stretches from the northern part of the country to the southern part. The main drainage system of Lake Malawi is Shire River which is the largest river in Malawi. Shire River is the only outlet of water from Lake Malawi and passes through Lake Malombe (Figure 1) and goes down to the southern tip of the country. The Shire River goes through Chikhwawa and Nsanje districts and joins Zambezi River in Mozambique. (One World Nations Online, n.d.).

Chikhwawa and Nsanje districts are part of the Lower Shire Valley, as it is called, are exposed to impact of the over flooding of Shire River almost annually. Much as the flooding is of concern to the government and to the communities, people benefit from its flooding through making gardens due to the alluvial soils deposited by the flooding water as well as fishing.

**GEOGRAPHICAL MAP OF MALAWI SHOWING THE LAKES AND THE MAIN DRAINAGE OF LAKE MALAWI, SHIRE RIVER.**



**Figure.....1 Map of Malawi (Source: Magellan Geographics, 1997).**

“Malawi faces a number of natural disasters which include floods, drought, stormy rains, strong winds, hailstorms, landslides, earthquakes, pest infestations, diseases outbreaks among others. In this case, disasters disrupt people’s livelihoods, endanger human and food security, damage infrastructure and hinder socio-economic growth and development.” (Malawi National Disaster Risk Management Policy, 2015).

Disaster risk management, together with social support, is considered within theme three “Social Support and Disaster Risk Management” of the Malawi Growth and Development Strategy II (MGDS II); a national development strategy that ensures that resources are targeted towards priority areas thereby contributing to the attainment of sustainable development. (MGDS II, 2012).

Chikhwawa and Nsanje have both a combined population of 863,852 according to the Malawi Population and Housing Census of 2018. In a further breakdown, Chikhwawa had 564,684 whilst Nsanje had 299,168. These two districts among others have been frequently affected by floods annually. Statistically, these two are the most frequent affected when one compares them with the rest of the other districts in Malawi. The Lower Shire Valley is in southern Malawi, bordering Mozambique, composed of Chikhwawa and Nsanje Districts is the most flood prone and affected area. Floods stifle development efforts at every level. Globally, the UN report Economic, Losses, Poverty and Disasters 1998-2017 indicates that between this period, floods were the highest causes of people deaths, displacement and crop destruction and seconded by storms and earthquakes as the third. (NSO, 2018).

The flooding of the Shire River in Chikhwawa and Nsanje districts has brought in the government and agencies into the area to intervene in the disasters occurring almost every year. A number of non-governmental organisations have offices established in the districts, Chikhwawa and Nsanje whilst others are in Blantyre and Lilongwe. Those outside will always intervene when there is a disaster in the Lower Shire bringing in their expertise to assist the victims.

The role played by non-state actors or non-governmental organisations is very much appreciated in disaster management, especially from a layman’s point of view, however technically, there is a need to look more into government policies as well as the practices that result into a better response to flood disasters.

Therefore, the research is designed to review the existing policies and practices in the whole operation in management of floods in the Lower Shire, as well as the existing challenges faced by those with the technical know-how in the operations. In the research process, consideration

will be taken on other country's policies and any other relevant documents related to flood disaster management, in Africa and in other regions as well, more particular in Asia. Asia has been taken on board because it faces similar flood disasters as in Africa, even more. "Without a comprehensive disaster management act, it has often proven difficult to guarantee that disaster risk reduction and preparedness measures are accorded proper priority among the many daily tasks facing government and that the many agencies and sectors of society that need to be involved are adequately motivated and coordinated." (IDRL, 2011, p 4).

## **BACKGROUND TO THE RESEARCH**

The whole world is not spared in any form of natural disaster, throughout the decades, Africa has been one of the hard hit and continues to be so, especially when we look at floods. There are so many factors that contribute towards such state of affairs. "Floods are the most important hazard in Africa in terms of frequency and magnitude, more than drought and war. There are many countries susceptible to many natural hazards. Disasters kill more people in Africa than elsewhere in the world. Why, is a good point for discussion?" (WHO/EHA/EHTP, 1999). The fact that floods are more frequent provides a high risk to people who are living within those areas risky areas. For instance, in the country under study, floods are a frequent phenomenon in the southern part of Malawi and frequently displaces inhabitants almost every year.

As every government wishes to register success, different organisations or agents must work together under the umbrella of the host government as a coordinating authority. However, this is not the case in most of the disaster management operations across the globe. The continuous flooding in the Lower Shire and the complexity of the operations to ensure that people are safe and receive necessary humanitarian support rests in the better use of applied instruments and the relations amongst them. These are policies on disaster response and management, operating procedures, practices and how the challenges provide a learning platform for the government and agencies in perfecting their approaches. In short, successful and well managed disaster management environments depend on the aforementioned outlined spots that are critical in every operation undertaken.

"Pakistan Floods of 2010, flooding of the Indus River in Pakistan in late July and August 2010 that led to a humanitarian disaster considered to be one of the worst in Pakistan's history. The floods, which affected approximately 20 million people, destroyed homes, crops, and infrastructure and left millions vulnerable to malnutrition and waterborne disease. Estimates of

the total number of people killed ranged from 1,200 to 2,200, while approximately 1.6 million houses were damaged or destroyed, leaving an estimated 14 million people without homes.” (Britannica Academic, 2010).

## **JUSTIFICATION FOR THE RESEARCH**

Due to the continuous flooding experienced in the southern part of Malawi, to be more precise, Nsanje and Chikhwawa districts, there has been a lot happening as far as responses are concerned, from the various agencies and the communities themselves’ point of view. In general, it has been found that in disaster response, there has been a lot of data that has differed, agencies have been using the isolation approach to human response. This has caused a lot of friction among people in their understanding, receiving aid, and provisional targets.

“Both the intensity and the frequency of floods are definitely indicating to be on the increase in the country while the capacity to contain them and to protect people to substantial levels is lacking. The paper indicates that the flood hazard has continuously made the habitants of flood plains in Malawi vulnerable and that the extent of vulnerability to the flood risk is very high in the Lower Shire Valley.” (Mijoni et al 2009).

Therefore the need to understand and look at the existing instruments has become paramount so that information available should give a clue to their importance.

When one looks at the policies and other related operating documents, they are meant to direct and help monitor and standardise the whole working system so that the operation flows and goes in the right direction. It somehow gives a perception that there could be more questions than answers on the understanding, applicability of the existing policies and other related instruments, which is the whole purpose of this research, based on the four management functions: planning, organising, directing and controlling.

## **RESEARCH AIMS AND STUDY**

To review the impact of the policies, practices and challenges on flood disaster management in Malawi with a special focus on the Lower Shire Valley which is one of the most vulnerable areas in Malawi among many.

## **RESEARCH QUESTIONS**

1. Do players in the flood disaster field management acknowledge the existence of disaster management policies and practices?
2. What instruments are available to measure the implementation of the existing policies and procedures in flood disaster management?
3. Is there a time available to all players in flood disaster management where the policies and practices are interpreted and discussed?
4. What are the challenges non-state actors face in the implementation of the policies

## **SEARCH METHODOLOGY**

Search methodology can simply be defined as the route taken or adopted to solicit information in addition to the techniques used as relevant in mining important information for a research. For instance, in this research, going through relevant published and unpublished material, the reports provided by relevant sectors in floods management, meetings, situation reports (sitreps), annual reports on the internet or journals just to mention but a few, are amongst used.

Sileyew 2019 simplified the definition of research methodology as a way applied by those who conduct studies. Sileyew continues that those who conduct studies come up with a problem and objective and in the final analysis, provide an outlook from the data obtained throughout the study period.

In order to make the search more comprehensive and detailed, the research applied a number of methods through casting the net wider in order to collect as much information and data as possible. A systematic approach was used in the sense that the available literature on disaster management and floods was sourced through usage of a combination of key words, for instance floods and management; policies and procedures, national disaster policies. This outright approach helped to access the required literature from publication interviews and books, both online and paperbacks. Which means, the combinations done were able to bring our relevant information that surrounded the general management of floods within the country understudy and across the globe.

Additional search words and phrases were also used because in doing so, the search was in a position to go in-depth further because of the set-up of the phrases. For instance, disaster policy,

national disaster plan of action, floods impact, disease control during floods, disaster management framework. This phrase combination game assisted a lot in bringing out information that was important for the research. Such collection of information helped to narrow the topic and get to the root of the required niche of the study.

There was also literature that was sourced from a number of randomly selected data bases in relation to disaster management across the globe. This was from countries with vast experience in managing floods and tornadoes, especially in Asia, the experienced international bodies like the International Federation of the Red Cross and Red Crescent Societies, the International Committee of the Red Cross (ICRC), International Organisation for Migration (IOM), United National Development Programme (UNDP), United Nations Children’s Fund (UNICEF), journals covering floods disaster reports and disasters in general e.g The International *Journal of Disaster Risk Reduction* (IJDRR), *Journal of Geography and Natural Disasters*, various government ministries and department as well as office of the President involved in disaster management in specific countries.

The list below speaks volumes of the literature that was obtained and generated from;

EbsCohost.....etc.....

National Disaster Management frameworks.....	12	literature
Emergency management frameworks.....	16	publications
DM Policy analysis.....	15	government literature
DM policy.....	15	organisational material
Budget allocation by governments on DM....	10	planning/response
UNDP sector allocation.....	5	in disaster response
Role of community in disaster response.....	23	literature
District structures in DM .....	21	literature
Annual reports on DM globally.....	7	documents reviewed
Fatality rates caused by floods in general.....	8	reports
Fatality rates caused by floods in Malawi.....	6	reports
Coping mechanisms devised by locals.....	16	literature
Forums for sharing reports.....	5	literature

The research used a number of techniques and methodologies which were very important in the general collection of the needed data. Since the study was based on sourcing of any needed

information from various data bases, it was befitting that all the relevant documents related to flood disaster management be reviewed. The sources suggested were through accessing hard copies or soft copies through contact with sectors involved in flood disaster management or through published articles and reports available on internet. In addition, some sectors also published their activities or documents on their websites which were also vital to the study. In general, the key methods applied in the study were the availability of annual reports, publications from journals, organisations formed on coordinating works of relevant sectors in flood disaster management, websites for individual sectors and any relevant publications in-line with floods globally.

A comprehensive study was conducted on literature review of all relevant published material in English between 1990 and October 2020 that addressed the following statement:

The critical review of the policies, practices and challenges in flood disaster management in Malawi, with a special focus on the Lower Shire Valley. The Lower Shire Valley has been the principal focus because of the annual floods the area experiences almost annually, this engages different players including the government as the coordinator in responding to disaster. It does so in-line with available guiding instruments e.g. policies. The effects of the floods have in more or less affected the livelihood of the population and it has now become as a routine. In Nsanje district in 2008, interviewing one of the victims, “I have lost everything I had including belongings and animals, lucky enough no life was lost in my family,” one of the victims said.

An in-depth approach was applied in this research that would eventually bring out relevant information or data regarding the question understudy. Initial searches were conducted using key words that were deemed relevant to the topic of the study. For instance, the keyword used was “Disaster Management,” “Floods” and then eventually combined as “Floods disaster management,” National Policies, Disaster Management Policies in addition to the ones mentioned earlier on. In addition, the words Internally Displaced Persons (IDP) and Internally Stranded Persons (ISP), Infection control, “Disaster management, preparedness, migration and indigenous knowledge,”(Raimundo, n.d.), floods policy were also key words that were critical in the quest to source out relevant information in regards to the literature of the topic understudy. This provided an easy way of sourcing relevant information for the study.

For instance, International Organisation on Migration (IOM) ( March, 2019) provided a report following the experience of Cyclone Idai in Malawi in 2019: “Since the beginning of March 2019, Malawi has experienced floods and sustained heavy rains caused by the tropical cyclone Idai weather system. From 1 — 6 April 2019 IOM, in close coordination with the Government of Malawi through the Department of Disaster Management Affairs (DoDMA), conducted DTM Round II multi-sectoral location assessments in 103 displacement sites in Chikwawa, Nsanje, Phalombe, Zomba districts.” This is typical of an example that provided the research with information regarding the relevance to the topic under study.

Additional search phrases were used like Contingency Plans, Disaster Relief and Rehabilitation (DRR), Cholera outbreaks, Rising water level signs, Non state actors (NSA), Food and Non Food items (NFI), Shelter and Sanitation were used to zero down the topic to specificity.

Literature was retrieved or obtained from various databases which included the reports by relevant sectors such as the Malawi Red Cross, The International Federation of the Red Cross and Red Crescent Societies, the Medical Council of Malawi, the United National Development Programme, the Ministry of Health and Population, the Department of Disaster and Preparedness, the Office of the President and Cabinet and from various governments structures from other continents apart from Africa just to mention but a few. It was vital that the research collects information from other relevant stakeholders, officials who have amassed a lot of experience in disaster management. One of the stakeholders amongst many is the Malawi Red Cross which is a key player in responding to disasters in the country and a big player within the Southern Africa region. It is an institution that has many years in this field of natural and human made disasters. Established in 1937 with a key role of First Aid services during the colonial period, it has gradually developed into one of the most trusted organisations in Malawi and by the government too. It played a very big role in the past during the influx of Mozambican refugees between 1985-1995 which was more than one million. In addition, there have been more activities that the organisation has been involved in, including floods that have devastated the country all these years, and in particular, this one under study, the Lower Shire Valley.

**Figure .....2..floods in Nsanje**



**Figure 3... Nsanje flooding:** Photograph: Amos Gumulira/AFP/Getty Images

Flooding in Malawi's most southern district, Nsanje. Official figures confirm a total of 176 people dead, with a further 153 missing.

## **Emergency Management Framework**

It can be defined as a building block of how an organisation or government deals with getting things done in an unexpected scenario, natural or human-made. This has to do with planning and deployment of required resources, for instance human, material and finances. “Emergency management is the organization and management of the resources and responsibilities for dealing with all humanitarian aspects of emergencies (preparedness, response, mitigation, and recovery). The aim is to reduce the harmful effects of all hazards, including disasters.”(Wikipedia, n.d.). However, Omni.sci (n.d.) further defines emergency management as “The ultimate goal of an emergency management plan is to provide a data-driven framework that helps communities recognize and reduce vulnerabilities, cope with the aftermath of a disaster, and further develop disaster response plans.” It can be deduced from both of these definitions that there is a very equalling understanding and both of them talk about reducing vulnerabilities through getting things done by people.

The actions of addressing disasters in communities has changed over time taking into account the different technologies, not alone information technology, population movements and activities. The evolvement has been multifaceted in the sense to bring down the vulnerability to exposed environment of hazards, thereby eliminating the impact of disasters to a specific community. This is also inline to prepare, respond to and recover from those disasters. All these bring to light the challenges governments face because of the extraordinary disaster events pose on the respect decision making. “Moreover by definition, any calamity that overtakes the capacity or the resources available to the government is definitely called a disaster. It overwhelmingly surpasses the ability of a community or government to act or respond to it.” (Wilson, n.d.).

In the event that the community and the government are not able to cope with a disaster, the government will definitely seek assistance from outside, higher levels are called upon to assist, by either supporting or complementing the activities of the subordinate jurisdictions. As a result, emergency management and response are intrinsically intergovernmental, cross-sector policy implementation challenges.

## **THE CONTEXT OF DISASTERS**

The whole idea of putting mechanism in place in managing disasters is for the government and its partners to reduce as much as possible, the extent to which a community situation is worsened by a disaster as compared to their previous condition. Its common knowledge that there are numerous actions undertaken by various players who have the mandate to offer assistance in both the situations, prior to the disaster and after (recovery programmes). Planning and the availability of different frameworks such as policies and working procedures, offer a better chance to respond effectively to a disaster from the government point of view and to all partners.

Manesh (ed.) (2017) clearly expresses the well-defined approach to floods as a hydrological event characterized by high discharges and/or water levels that can lead to inundation of land adjacent to streams, rivers, lakes, wetlands and other water bodies. Flood events are caused and/or exacerbated by intense, long-lasting rainfall, snowmelt, and failure of a dam or embankment system, earthquakes, landslides, ice jams, high tides, storm surges and by human activities, including the operation of flood control systems. Floods are a hazard and not a disaster. In many places, floods are events of annual occurrence. Floods become disasters when they are of unusual proportion, occur in unusual places, or occur unexpectedly, thus exceeding the ability of the affected community or society to cope with the event, Manesh argues. He continues to say that the severity of flood disasters is not solely linked to the intensity of the natural hazard but also many human-driven factors that contribute to increasing the risk for flooding and magnifying the impacts, such as soil degradation, deforestation, urbanization, and poor urban drainage.

The risk of flooding for a particular community or enterprise consists of:

- (1) The probability of a flood hazard in the area,
- (2) The vulnerability of the area to undesirable consequences and economic loss from floods.

However, Manesh (ed.) (2017) misses a point when he points out that annual floods are no longer disasters, still they are, even if communities or governments know floods will soon be affecting them. That is why the word “contingency planning” comes in. It is defined as a

disaster because what defines it is not the frequent or knowledge on its impending coming but rather its impact.

Donahue et al, (2001) and Waugh, (2000) concur that there are five major characteristics of disasters that are very hard to overcome and that they are always large and rapid and that gives no time to react adequately by the affected population or government; those who may be in a position to offer the needed help and the resources may also be amongst those heavily affected; what culminates at the end is that the reaction or response to the disaster makes it an urgent matter and thus entails that the thirst to cope with them ends end draining a lot of human resource, equipment, supplies like food, water, medicine and shelter as well as funds.

They both continue to elaborate that disasters are uncertain with respect to both their occurrences and their outcomes. This uncertainty arises because hazards that present a threat of disaster are hard to identify, the causal relationship between hazards and disaster events is poorly understood, and risks are hard to measure—that is, it is difficult to specify what kind of damage is possible, how much damage is possible, and how likely it is that a given type and severity of damage will occur. Geospatial models can help predict the locations, footprints, times, and durations of events, and the damage they may cause, so that jurisdictions can better prepare for them.

Risks and benefits are difficult to assess and compare. Disasters present emergency planners, emergency managers, and policy makers with countervailing pressures. On one hand, it is important to minimize the exposure of populations and infrastructure to hazards; on the other, people want to build and live in scenic, but hazard-prone, areas and often oppose government regulation. In the Lower Shire Valley, where the communities live in very risky areas, that's along the river, have been persuaded to move to more higher ground, but all these efforts have fallen to deaf ears as most of them don't want to move despite the hazards before them.

For instance, according to News 24 Newspaper (2001), "Environmental Affairs Minister Harry Thomson from Chikhwawa and District Commissioner Kiswell Dakamau both tried to get the people to move to higher ground, but to no avail." If it were not for our gardens, we would have heeded Honourable Harry Thomson and the district commissioner's advice to move away. But where would we go?" asked the chief. All these efforts came after heavy rains fell in Nsanje and caused a lot of flooding where a number of people lost their lives, livestock and property

that included their crop. This clearly demonstrates the mind-set of people regarding their cultural values and how they feel important to continue habiting the areas along the river despite the threats they encounter almost every year due to the flooding of Shire River.

“In these two districts understudy, in some areas, the disasters are relatively rare if none at all. Thus, many communities are unlikely to have experience with disasters, and governments may feel little imperative to build their disaster-management capacity, even if the hazards are real and the risks formidable” (Waugh, 1988). “More obvious and immediately pressing public service concerns readily displace disaster preparedness as a priority. Specialized capabilities, such as geospatial data and tools, are especially vulnerable to budget cuts and resource reallocation, they both concurred to each other.” Waugh (2000) and Haddow et al, (2003).

“Complex emergencies tend to attract 3 major actors i.e. bilaterals (governments of individual countries), multilaterals (e.g. UN agencies involved in relief work like OCHA, UNHCR etc) and non-governmental organizations (NGOs). The military is also increasingly being recognized as a major actor in emergencies.” (Muriuki, n.d.).

### **Preparedness**

National Research Council (2007) provides a definition that preparedness involves activities undertaken in the short term before disaster strikes that enhance the readiness of organizations and communities to respond effectively. Preparedness actions shorten the time required for the subsequent response phase and potentially speed recovery as well. During this phase, hazards can be identified and plans developed to address response and recovery requirements. Disaster plans are often developed by individual agencies, but one challenge of disasters is that they demand action from agencies and organizations that may not work closely together from day to day. Thus, plans are much more effective when developed collectively by all agencies that will be responding so that resources and responsibilities are coordinated in advance. Also during the preparedness phase, training and exercises may be conducted to help prepare responders for real events.

As with planning, training and exercises, they continue to expand that the training may be conducted by agencies in isolation, but they are more powerful when conducted jointly so that interfaces can be resolved. Perhaps the most important result of joint planning and exercising

is the relationships developed between those who will be involved in response. In the best instances, these processes develop trust among those who will be called upon to work together during an event.

The general rule, though it is not rule of the thumb, preparedness has to have an objective or objectives which include the importance of the data on the ground, disaster or impact area, identifying what the data requires to be established, developing data sets, as well as sharing the data across different agencies who are stakeholders in the programme. Some of the key interventions that need to be considered are the development of the data framework and foundation data on the infrastructure, the hazards and risks the community are exposed to preparedness is greatly facilitated when all potential responding entities are working with the same data sets for the same features. In addition, decisions arrived at are also must be made as to whether data will be accessed from single sources or whether they will be hosted by some or all of the agencies involved in the response.

In the preparedness phase, geospatial tools can be used to display the distribution of hazards and risks as they exist now and risks as they may exist under different future development scenarios. This enables local and regional planners to work with emergency managers to plan for more sustainable futures through the avoidance or mitigation of higher-risk alternatives. For example, evacuation routes can be planned based upon demographics, capacity of existing roads, and traffic volume as a function of day and time.

## **Response**

It seems obvious that the response to a flood disaster is to immediately provide assistance to the victims of such a calamity. In fact, the response is meant to reduce life-threatening conditions, and providing aid that may help in sustaining their live and in addition if possible, stopping additional damage to property. During this period, the community or those affected, engage themselves in a number of activities that may help them sustain life. During this period, rescue and search efforts are made to locate those washed away or trapped in mud. During the same period, water and other basic commodities are distributed to the affected population.

## **CHAPTER 2 LITERATURE REVIEW**

### **2.1 INTRODUCTION**

Countries around the globe have at some point in their history encountered natural or human made disasters. Some countries experience disasters almost annually because they are positioned geographically in areas that are prone to disasters and some it is on and off. However, the disasters they experience differ in one way or another. It is important to note that these countries have developed their own methods to deal with such disasters over time, developed various instruments or tools that help them manage the disasters. In contrary, the policies and other instruments used to manage disasters may differ from one country to another and are particularly tailor-made for their specific geographical areas, disaster type and the quality of the human resource they have.

In case a country is overwhelmed by the size or magnitude of a disaster, governments in most cases declare a state of emergency to allow international agencies to come in to assist. The assistance provided is expected to be in line with the kind of the disaster and the geographical setting of that particular country, in addition to the application of internationally accepted instruments, for instance, the SPHERE Standards.

“People affected by a disaster or conflict have the right to receive protection and assistance and to ensure the basic conditions for life with dignity. Humanitarian standards are statements which describe the sets of actions needed so that crisis-affected people can enjoy this right.” (SPHERE, n.d.).

The impact of the floods is enormous and hence it is very costly on both the victims through the loss of their livelihoods and the government and recovery takes a very long period unless humanitarian aid is provided. Much is aid may be provided, the most challenging part is the psychological element that the floods bring to the victims, which needs to be provided though it is not the case in most circumstances. (Shabu, 2019).

Between 1998 and 2017 climate related and geophysical disasters killed more than 1.3 million people and left a further 4.4 billion injured, homeless, displaced and indeed of assistance. Whilst majority of fatalities were due to geophysical events, mostly earthquakes and tsunamis,

91% of all disasters were caused by floods, storms, droughts, heat waves and other extreme weather events, according to a report by the UNIDRS (United Nations Office for the Disaster Risk Reduction) and CRED (Centre for Research on the Epidemiology of Disasters) Economic Losses, Poverty and Disasters 1998-2017. This further defines how floods impact the majority of the communities.

According to Nillson, Shela and Chavula (2010), they state that according to available statistics, flooding is the most common disaster in Malawi, thus responsible for 40% of all recorded disasters. “They further explain that between 1967 and 2013, there have been 20 incidents of severe flooding that have been reported (GoM, 2015a). In the cause of that, the floods that occurred between January and February in 2015 ended up affecting approximately 1.1 million people, thus displacing 230,000 and leading to 170 fatalities and 172 reported missing ( GoM 2015b; Rudari et al, 2016).”

“Disasters are ‘intractable problems that test the ability of communities, nations, and regions to effectively protect their populations and infrastructure, to reduce human and property losses and to rapidly recover after the event’. Disasters frequently involve ‘disruptions’ and ‘losses’, as well as ‘challenges’ to the ability to recover rapidly. Relevant authorities must act together, therefore, to predict and prevent disasters, and to reduce their ramifications.”(Altay et al, 2010).

However, Alexander,(2002) and Cutter,(2006) agree that a disaster is often reserved for a ‘serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts. It is a calamity in the community that diverts the attention of a community away from their routine activities to something that suddenly disrupted them and demands time and resources to address.

Making an analysis of the two definitions above, undoubtedly there is one key elements which both of them missed, that’s the creation of a scenario that a community is not able to cope or handle a situation on their own that has negatively impacted them. It is in my opinion that a better version of definition has to include the inability of the community to cope.

“Disaster however, is generally a disruption of normal life to a community by natural or artificial phenomenon and causes distraction to land, plant life, property or injury to humans or even causes death. It is often beyond the capacity of the community or even the nation. Flood

disaster management like other disasters management can be grouped into phases; the preparedness phase where activities such as prediction and risk zone identification or vulnerable mapping are taken up long before the event occurs, the prevention phase where activities such as forecasting early warning, monitoring and preparation of contingency plan are made before or during the event, and the response and mitigation phase where activities are undertaken after the disaster and these includes damage assessment and relief management” (Western et al., 1993).

People within the community or village suffer the most from disaster damage. In practice, they are the first front line responders which may include ‘fright and flight’ human survival measures such as evacuating to higher ground and harvesting survival foods, building indigenous shelter and use of traditional medicines. Depending on the communities’ knowledge of certain hazards, physical and psycho-social health, they often undertake precautionary measures and respond to the disaster by assisting before outside help comes. An increase in the frequency of disasters and consequent impact on lives and livelihoods has led community members to develop some coping mechanism/strategies based on their existing capacities. However, because of limited resources, knowledge, skills and technical support, communities are often outside any rapid assistance network. The ability of communities to manage emergencies limits the number of disasters requiring external aid assistance. At present many emergencies become disasters when local resources are not adequate to respond with.

On the contrary, a disaster is distinct on the catastrophe it does to a community irrespective of the ability to manage it or not. This demonstrates that the impact of a situation does not take away the fact that it is a disaster.

In partnership with communities, NGOs, the National Red Cross, the United Nations Systems and development partners, this Policy and the Disaster, Crisis and Climate Adaptation Management Strategy will direct community risk management capacity development programming for national risk priorities. This will need extensive integrated investments in community and District Administration human and physical resources to increase community resilience to disasters, conflict and climate change. This would commence with Community Based Disaster Risk Management (CBDRM) partners assisting communities to map hazards, vulnerability and risk. Out of the National Risk Priorities, community specific risks will be identified and community centric management solutions identified. Community-based activities may include first aid, swimming lessons, and traditional, universal survival skills. For

coastal communities hazard specific survival skills will include recognising and responding to tsunami, lowland, marine flooding and sea level change. For upland and highland communities risk management would cover risks such as flash flooding, wind damage, landslides and climate change. All the above are made possible taking into account the existing various instruments like policies, contingency plans or even disaster management plans that are available. Countries across the global vary in their approach to disaster management and that is what translates to a well-managed response or failure.

Dano et al (2019).“Natural disasters are said to be cataclysmic or in other words a violent natural event that could give either a direct or indirect impact towards the public health and wellbeing. Flood is one of the major concerns in natural disaster since it happens in many places all around the world. ..”

If a community at the village level is unable to meet disaster management needs, help should be sought from the sub-district administration. In turn, the sub-district may seek assistance from the district if it also lacks the resources to meet a need. Further the District Administration may seek national assistance when its resources cannot meet a need. If the government has reached the limit of its capacity to deal with significant events, assistance may be sought from the international community in-country and or externally.

### **Laws and Regulations**

In the context of Nepal, before the advent of Natural Disaster Relief Act (NDRA), 1982 A.D. there was no well-structured disaster policy. Prior to 1982 A.D. relief and rescue work was carried out either on the basis of power base or as the social work. Thus, realizing the need of an act Natural Disaster relief Act, 1982 A.D. was formulated which has already been amended twice in 1989 A.D. and 1992 A.D. ( source: Disaster management in Nepal: A Review -- A Country Paper Presented By : Dr. Meen B. Poudyal Chhetri (*Under Secretary*)Ministry of Home Affairs -Disaster Relief Section. Singha Durbar, Kathmandu, Nepal.

This is a clear indication that the country was operating on either a borrowed document/instruments or without and thus alone gave a lot of challenges to the government of Nepal. That showed there was big concern and that Nepal government wanted home-grown

plans, legislation and policies that would obviously guide in disaster management in any part of the country.

According to the International Federation of Red Cross and Red Crescent Societies (n.d.), if applied effectively, Disaster Law and Policy can support more integrated, inclusive and equitable approaches to building resilience. They can mandate governmental actors to identify, plan, resource and meet the specific needs of vulnerable groups. They can require the direct and meaningful participation of vulnerable groups in decision-making, design and implementation of disaster and climate change activities. In this case, it is crystal clear that the absence of law and policy by a government is tantamount to affect directly the operations from preparation to response and rehabilitation of a disaster.

A paper presented in Bangkok, Thailand (2012) states that in recent years national and international militaries have played an increasingly important role in crisis relief efforts, and disaster management in particular has come to be seen as one of their core tasks. Disaster management is growing not least because the incidence of disasters of all sizes is predicted to increase in frequency. As the frequency and the human cost of natural disasters rises, humanitarian and military actors will increasingly find themselves trying to assist the same populations.

Countries like Spain and Sweden have the provision within their constitutions and legal framework in the deployment of the military in case of disaster response. It is a special role that has been given to them apart from protection of the state, they added civil protection as one of their fundamental roles as a ground for cooperation between the military and the civil protection system. “In this line of developments, a Royal Decree of 1996 established a new structure of the Ministry of Defence and defined the functions of the Defence Policy Directorate in relation to civil preparedness, civil emergency planning and the armed forces contribution to disaster relief operations.” (Ratchev et al., p 152., 2018). They both contrast on the other hand within Europe, Belgium has a completely different approach, where there is no constitution or other legal prescriptions exist in relation to the provision of military support to civil authorities in domestic emergencies, but the armed forces might be used in exceptional cases when civil capacity is not sufficient.

However, despite existing guidance on the use of military assets in humanitarian response, their use continues to be a source of tension between international humanitarian and military actors in some contexts and there are several challenges to achieving an effective dialogue between these actors. Early structured engagement by humanitarian actors with the military, i.e. before a disaster strikes, may go some way to improving the overall response. Such early engagement would ideally build relations, clarify roles, ensure appropriate preparations for disaster response and raise awareness of the distinct nature of humanitarian action and the need to preserve the integrity of humanitarian principles.

It was established that since 2000, policies, legislation and structured operating procedures regarding disaster risk reduction and disaster management have been put in place or are underway. There was no such arrangement before the devastating floods and cyclone in Mozambique in 2007. It is recorded that the military support obtained from Malawi and South Africa to help the government of Mozambique came in as a result of the official and mutual engagement between Mozambique and those two governments. Cosgrave, J.,(p.64, 2007). They further say it was unfortunate that the floods and cyclone came at a time when Mozambique had just developed a new disaster management structure had been in place for only a few months.

Malawi Red Cross and the local Military, the Malawi Defence Force have on several occasions engaged in joint operations in preparation for disasters in the country. One of the places that these training sessions took place was in Salima, a district in the eastern side of the country, in the central region. It is also very vulnerable to floods as it is along Lake Malawi. Participants were drawn from within the country but also from countries from Southern Africa. It was a training which was based on preparing for any impending disasters in the region and human resource would be deployed from among the participating countries called SAPRCS (Southern Africa Partnership of the Red Cross Societies).

Other training of such calibre were also conducted before in Mozambique in Chimoio in the mid 90s where members were also drawn from the Southern Africa Region. Though in the absence of the local military in Mozambique, the training carried the same theme and was

focused on the predominant disasters in Mozambique. All these training were organised and coordinated by the International Federation of Red Cross and Red Crescent Societies under the umbrella of a programme called Regional Disaster Response Training (RDRT).

### **Human resources and training**

Skilled managers and volunteers are necessary for preparedness. Potential activities and processes include joint training exercises with co-actors who will respond cooperatively in the event of a disaster. Training should aim to build human relations and trust, shared values and attitudes, and common priorities and cultures (Kapucu, n.d.).

Examples of training activities and processes include the cultivation of multifunctional and multidisciplinary partnerships created through pre-disaster coordination, joint planning and training, mock evacuations, and relationship building (Cyclone Larry Interviewee 9).

### **Process management**

The management of preparedness processes is crucial to an overall preparedness strategy. Commercial sector logistics expertise can and should be applied to improve the overall performance of DM. Disaster managers need to understand the core capabilities of logistics and supply chain management in a preparedness and response context. Preparedness and recovery logistics need to be agile, adaptable, and aligned. Kunz, Reiner, and Gold modelled the performance of different preparedness scenarios in order to diminish the impacts of disasters. They note that the repositioning of inventory in disaster-prone locations, in combination with the training of staff and the pre-negotiation of agreements with suppliers and transporters, reduces delivery lead times by up to 67 per cent, as compared to a scenario with no such action.

Furthermore, disaster managers need to take part in joint activities and processes before a disaster occurs to cultivate understanding and close relationships with important suppliers of disaster equipment and support services. They need to develop strong relationships with principal organisations, such as insurance companies, equipment vendors, and transporters, enabling efficiency and effectiveness in the sphere of disaster recovery. Such relations facilitate the timely identification of appropriate recovery equipment and support services (Cyclone Larry Interviewee 19), as well as early identification of potential problems in the supply of

required materials for staff and community sustenance, such as food, medicine, and water. Partnerships lead to the development and implementation of mutually agreed logistics and supply chain management service standards (Cyclone Larry Interviewee 20).

On the other hand, the Tanzania Disaster Management Act, 2015 shows that where an agency feels that an emergency situation is enhancing a disaster in a particular location, the government shall activate and implement the National Emergency and Response Plan for that area. In this regard, the Minister in his or her capacity as the political head of the ministry, order in the gazette and even determine the procedural activities and the operations that will be decided in that area.

### **1.3 Purpose (Malawi Disaster Risk Management Policy) 2015**

The need for a Disaster Risk Management Policy for Malawi has been felt through experiences and lessons learnt by government, civil society organisations and development partners in the coordination of disaster risk management activities in the country. Despite the fact that the Government of Malawi recognized disasters as one of the key factors hindering economic growth and poverty reduction and the need to shift from ‘disaster response culture’ to integration of disaster risk reduction into sustainable development planning and programming, the absence of a Disaster Risk Management Policy inhibited the country’s adoption of a proactive strategy to addressing this problem. This policy, will therefore, serve the following purposes:

- Enhance mainstreaming of DRM in development planning and programming in order to integrate DRM into sustainable development;
- Enhance coordination in the implementation of DRM programmes by various stakeholders in the country;
- Ensure adequate budgetary processes which will allow DoDRMA to effectively implement disaster risk management programmes in order to fulfil its core mandate of achieving enhanced disaster resilience; and
- Promote enforcement of buildings and other infrastructure standards which will lead to a reduction in disaster losses.

However, the role of the government in terms of following up issues from the inception to the very end can never be substituted or ruled out. For instance, the fact that there is a point on the development planning process demonstrates its role in the whole cycle in management. For instance, in Timor-Leste, the government developed a very comprehensive National Disaster Risk Management Policy which comprised a number of strategic areas. For instance, implement interaction between government agencies and local communities, especially through District, Sub-District and Suco Commissions, with the objective to guarantee and integrate response activities for the whole country. This demonstrates the commitment of the government of Timor-Leste on their vibrant approach to work with the local agencies as well as the community who in the most cases are the vulnerable groups. Interestingly, the same policy emphasised the need to recognising the human resource development at community through training of volunteers using an approach involving communities.

In addition, one of the most interesting component that features in the Timor-Leste policy is that the government would develop and maintain legislation on disaster risk reduction concurrently to assure its integration into development policies, plans, and projects, in the study phase as well as in the implementation phase and well as the element of developing and maintaining early warning systems, monitoring, coordination, and operational preparation plans and response for the national territory concurrently attending to structural development limitations at the national level;

- Improve management of the DRM sector in all institutional and operation levels concurrently, to take into account the low professional capacity of staff;

In the event that the government is overwhelmed with the disaster, this disaster policy continues to provide something striking, like achieving sustainability in public finance to respond to a great need for resources. The government understands that the general public would be in a position to provide financial support but also materially.

A framework is designed to be part and parcel of the overall strategy of a government to be in a position to respond to disasters. The Framework is designed to guide development of initiatives to address disasters.

The Framework:

- Recognises the roles of stakeholders including all levels of government in the coordinated delivery of disaster mitigation, preparation, response, relief and recovery.

A policy can be defined as a deliberate system of principles that have been designed or arranged to guide decisions of an institution and have the ability to achieve rational or balanced outcomes. The whole idea is to maintain consistency in the entire process. Or in a different way, it can also be defined as statement of intent, and is implemented as a procedure or protocol. Policies are generally adopted by a governance body within an organization or an institution.

In contrast, these two, the policy and framework is that policy is (obsolete) the art of governance; political science or policy can be a contract of insurance while framework is (literally) the arrangement of support beams that represent a building's general shape and size.

In reference to the Zambia National Disaster Management Policy-2005, its objectives are very clear and relevant in the case of the country, in addition, it goes beyond by exploiting the following that are not addressed in other policies;

#### **Objectives (Zambia NDM Policy- 2005)**

**ii.** To strengthen horizontal and vertical coordination mechanisms in order to effectively and efficiently implement the Disaster Risk Management activities and harmonize national efforts.

This objective is bringing the government to spread its tentacles in all areas and hence providing an efficient way of addressing the objective.

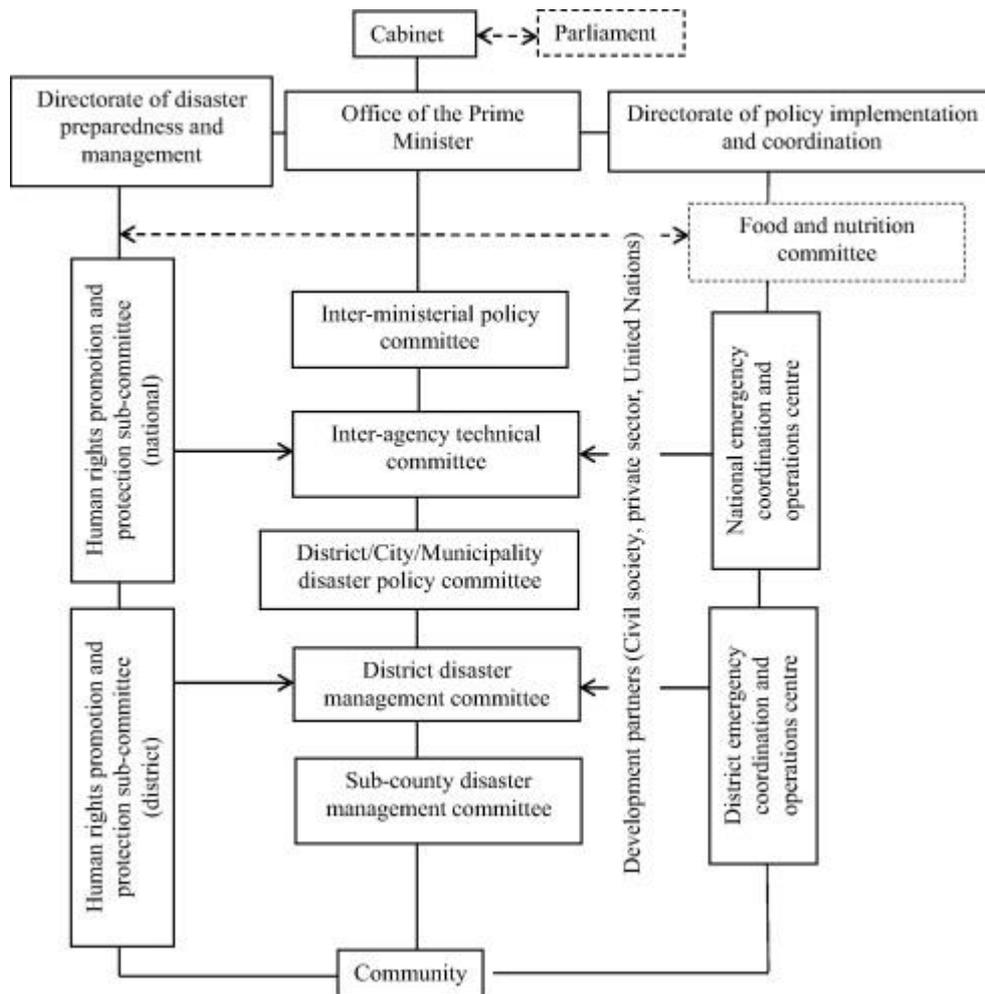
**iv.** To establish and strengthen the monitoring and evaluation mechanisms to ensure prudent utilization of resources as well as effective and efficient implementation of DRM programmes and activities.

This objective concurs very well with what is documented at the end on monitoring of the national policy that “In order to monitor and evaluate the implementation of this policy, Government through DMMU shall establish an integrated system of monitoring and evaluation for the implementation of this policy.”

The effectiveness and acceptance of the developed instruments that are to the benefit of the national and operationalization of disaster help all actors to develop theirs along the ones by the government. In fact, much as the stakeholders play a vital role in its development, they too involve other stakeholders when time comes for them to develop their “organisational specific”, which is a very good approach because it helps to cross-fertilise ideas across a number of professional and technical spectrum.

In the Kingdom of Morocco, the most frequent natural hazard occurring event is due to flood. Table 1 summarizes the natural disasters that occurred in Morocco between 1995 and 2005. The table indicates that floods have been the most frequently encountered natural disasters in the country. The number of affected people and lives lost due to floods exceeds any other natural disasters in the past twenty years. In Morocco, there is a need to conduct studies on the flooding potential in the cities located especially in oasis areas, which are most vulnerable than others situated far from the rivers. The aim of this study is to develop a flood simulation model for the area surrounding the Tata city (Tiguezmert region), situated on the SE part of Morocco. The physic parameters of the Tata basin provide an ideal environment to high floods: the basin is compact, with steep slopes, soils with little to medium permeability, with a dense drainage network and rather clear plant cover. This morphological situation contributes to amplify peak discharges recorded downstream of the basin.

## INSTITUTIONAL FRAMEWORK FOR DISASTER MANAGEMENT (UGANDA)



The institutional framework for disaster management in Uganda as stipulated in the policy. In order to strengthen accountability for the human right to adequate food, we have proposed, in the dotted line borders, for the inclusion of a multi-sectoral food and nutrition committee and the Parliament within the current hierarchical reporting structure.

## CHALLENGES IN FLOOD DISASTER MANAGEMENT

The Malaysian flood authorities should engage local communities as they have rich experience. Local leaders such as village heads can provide information and mobilise people on the ground and advise the authorities when distributing relief goods, reconstruction material, or other benefits. Some things to avoid include rushing in with reconstruction without recycling useful

materials from the disaster site, bulldozing over what could be valuable building materials, and rushing in quickly to implement adhoc plans. For example, establishing new institutions in short time frames, or developing complex and inflexible project designs are not encouraged. The authorities should always use familiar disaster management plans and systems with the local officials/leaders. Another thing to avoid is to relocate people away from their jobs and social contacts. This is useless as they would eventually return. The authorities should also be sensitive as not to impose grief counselling where it is found to be inappropriate, especially in the context of multi-ethnic Malaysia with multi-cultural beliefs. The National Disaster Response Mechanism (NDRM) is largely targeted for handling monsoon flooding (Liu et al, 2003). Consequently, this mechanism is less than effective and should be re-modelled into something more pro-active.

There is also seriously lacking in terms of stakeholders participation, although the authorities have recognised the important role of NGOs, particularly that of Malaysian Medical Relief Society (MERCY), Red Cross, Red Crescent and other NGOs. Capacity building is necessary. The disaster management mechanism should also adopt more non-structural measures, adopt state-of-the-art technology and cooperate internationally with other countries for addressing transboundary disasters. In terms of flood warning, there are many areas which can still be improved. While the total number of telemetric stations for rainfall and river flow in the country seems large enough, a closer scrutiny would expose the inadequacies of uneven distribution. Most telemetric stations are located in populated areas while the sparsely populated areas, especially highland watershed areas, do not have enough telemetric stations. The Malaysian Meteorological Department and the Drainage and Irrigation Department have also not utilised remotely sensed rainfall (radar and satellite sensed rainfall) as an input in its forecasting models (Chan, 2000).

### **Poor coordination**

By definition, coordination is the interaction that takes place in order to make a collective effort to achieve a desired goal. In most cases, it involves a number of players and one key leader in the process. In reference to flood response, coordination has to do with linking with all the players or stakeholders in responding to disasters through various means, e.g. in most cases, the government takes the lead role in coordination a flood disaster that may have ravaged a country.

IFRC defines coordination as a means of working together in a logical way toward some common result or goal. The operational definition of coordination, however, varies among personnel from different agencies. Definitions of coordination range from centralised coordination to simple information sharing between organisations. Between these two opposing viewpoints is a definition of coordination in which agencies have the will, instruments and trained personnel for effective collaboration with each other. Perhaps the greatest challenge to coordination is the inherent difficulty of identifying a common purpose and approach among agencies whose mandates, methods, resources and systems are diverse. The incentive to coordinate comes from experiences where the lack of coordination results in conflicts and misunderstanding.

It further defines what coordination is, that of independent organizations is undertaken for the purpose of eliminating fragmentation, gaps and duplication in services. Coordination can also mean harmonizing separate disaster actions or activities and clarifying roles and responsibilities. Methods for ensuring coordination include written memoranda of understanding, or other similar agreements. In coordinated systems, independent actors share information and work with a common purpose. Coordination may be either voluntary or mandated, and carried out through formal or informal agreements.

Save the Children states that the Darfur evaluation highlighted the need for more regular field coordination and better definition of responsibilities across Alliance members during an emergency response, an issue that persisted through the tsunami. Although fundraising coordination was stronger in the tsunami response, operational roles and responsibilities were still blurred.....IFRC World Disaster Report....echoes.....The Batagram Earthquake response evaluation found that Alliance members on the ground coordinated implementation successfully, but better coordination in preparedness planning was needed. This evaluation was also recommended that a single Alliance entity be established to support emerging responses, with a high-profile point of contact and representation on behalf of all Alliance members.

SCF further clarifies that efforts to clarify roles and improve coordination and planning resulted in the lead-member approach used in the responses to cyclones Sidr and Nargis. One member agency was pre-identified to lead the response on behalf of all members.

This is one area that has resulted into so many confusion and even hampering the proper model of helping those in dire need of assistance following a flood disaster situation.. This may be look from different angles and in the nature or how the disaster came into being. Was it a surprise or it was seen coming, anticipated? However, everything will bow down to the fact that all the players may have been so individualistic in performing their role. Who do we blame? The government as the lead in all aspects of the response in any setting or the rest of the players in the response.

Players in the arena may at times look upon each other in terms of how much resources they have in terms of human, material and funding and including the general history. In this regard, this total intercepts the spirit of encouraging agencies in working together for the good common cause. In fact, at times, the recipients who are the victims of the disaster may not realise this state of affairs mindboggling the players, but some may do so. Either of these two scenarios happening, the fact is that agencies on the ground are not properly understanding or doing the work together as a team or one family.

### **Problems and challenges of the coordination to deal with disasters**

In the time of crisis, the need for necessary resources will Crisis, be intensified and the ability to meet the demands reduces (33). Some needs for the coordination of emergency services during crisis, and key challenges associated with rapid response efforts are proposed. Although the coordination issue in the crisis management is important, success in emergency conditions may be impossible and in real terms during the response to the crisis may not be easy. In a research in which the coordination problems were studied, the September 11 attack was mentioned and it was noted that during the occurrence of the attack, the coordination issue had a vital importance in crisis management. In the mentioned study, the coordination issue was considered important and necessary, not only in preventing terrorist incidents, but also in ensuring an effective response to disasters. The attack on the World

Trade Centre led to overwhelming coordination problems. Some problems arising from lack of coordination are as follows:

1. Director of emergency services in the towers lobby had no authoritative data about events which occurred on the upper floors or outside the buildings.
2. TV viewers' information who had watched the fire spread throughout the country was better than the director of emergency in the towers lobby who had no access to television programs.
3. There were no safety issues in the first response to the fire.
4. The police helicopter was over the towers, but there was no communication link between fire-fighter leaders and police data.

**Lack of accurate data is also a problem.**

Commenting on the number of people displaced by flooding in the northeastern area of Garissa, community leader Issa Hussein said: "The reality is that no assessment of the situation been conducted since the rains started four weeks ago."

In regards to disaster management with a focus on floods, the challenges are vast as far as data is concerned. There is always conflicting data when it comes to the victims and the damage caused. This is so pronounced when there is no proper sharing of information and coordination body to handle this. It is even worse when there is political instability in the country, because forces are always coming from left and right to either balloon or trim the figures in order to score a point as far as donations are concerned.

When it comes to such situations, without a proper scrutiny or baseline information, the figures of the victims are bound to be exaggerated because everybody likes free things. In this case, thus when it is done by different players, every agent is bound to come up with different figures or data. That is why it is so important that such activities have to be entrusted to a specific agents of agents to work as a team and hence the data collected would then finally be shared with everyone. In that case, the data used with be regarded as valid and universal. The same applies with the government, it will be assured of using figures that are agreed by every player in the disaster operation.

In Afghanistan in 2000 when there was a very huge operation following two consecutive seasons without snow. The snow is the source of water for the farmers, hence there was drought. During one of the meetings in Kandahar, the Afghanistan Government official who was the coordinator of the operations was so furious because of the data that had been reported by a number of non-governmental organisations regards deaths in one of the IDPs located in the outskirts of the city. He expressed his dissatisfaction because he had expected the data to be lower than reported. The whole idea was that, the lower the figure, the more credit given to the government. It was all about the reality on the ground and to effectively implement programmes that would be in perfect match with the available data. After all, the correct the data we have, the better the approach and the perfection the implementation and thus the proper resource allocation to the right vulnerable groups will be.

In any operation of the disaster magnitude, data collection plays a very important role in resource allocation and the kind of help required. For instance, without understanding the staple food of a community, a non-governmental organisation may end up supplying the wrong food. Instead of giving rice, the provision would be sorghum and this may not at the end be the right support needed. So, having the right data on every aspect of the community is a right recipe to providing the right aid to the victims of the floods.

Apart from the data, the availability and respect of the SPHERE project becomes an important tool to use in these situations because it levels the playing field but also ensure that there is uniformity as far as aid is concerned. Any help provided from different sectors of the same item will equally be provided and hence does not imbalance the support given. In addition, policies of the government as far as aid is concerned need to be adhered to in order to ensure that all players perform within the government outlined of operations.

### **Findings: experiences of barriers to enabling NFM**

Our interviewees' experiences and expectations identified many perceived barriers to considering or implementing NFM in Scotland. Table **1** describes the main themes reported. Many of these issues interconnect to reinforce each other, as we explain below.

**Table 1.** Summary of factors acting as barriers to enabling and implementing Natural Flood Management (NFM), as elicited by this study and grouped by underlying themes.



Theme	Factor	Specific issues acting as a barriers to NFM
	<p>Formal and informal expertise</p> <p>Discomfort with new measures</p>	<ul style="list-style-type: none"> <li>• New and complex models required to plan NFM</li> <li>• Perception that NFM may ‘only’ be useful for small flood events or climate change adaptation</li> <li>• Engineering training and backgrounds predominate</li> <li>• Lack of familiarity or first- hand practical experience with NFM</li> <li>• Challenges of partnership working and/or stakeholder liaison</li> <li>• New multiple measures appear more complex, with less certainty or confidence that we can deliver them</li> <li>• Public pressure may favour ‘hard’ structural measures</li> <li>• Time lag between installation of measures and being able to demonstrate their effects</li> </ul>
<p>Complexities of co-ordination and communication</p>	<p>Potential mismatches between statutory processes, planning and appraisal systems</p>	<ul style="list-style-type: none"> <li>• Statutory Cost- Benefit assessments rarely favour prioritisation of NFM over structural measures</li> <li>• Flood prevention orders, which give rights to install measures on private</li> </ul>

Theme	Factor	Specific issues acting as a barriers to NFM
	Challenges of collaboration and communication	<p>land, may be perceived not to apply for NFM</p> <ul style="list-style-type: none"> <li>• Some ‘Flood Risk plan districts’ cross boundaries of multiple local authorities</li> <li>• Statutory requirement to reduce risk of severe floods over mitigating more frequent smaller ones</li> <li>• Delivery of NFM not a binding duty on statutory bodies</li> <li>• NFM schemes may need permission under Scotland's Reservoirs Act (2011)</li> </ul> <ul style="list-style-type: none"> <li>• Need to co- ordinate within large organisations</li> <li>• Need to work with other partner organisations at multiple levels</li> <li>• Need to co- ordinate multiple measures</li> <li>• Need to reach out to engage, persuade and co- ordinate land- managers</li> <li>• Diffuse and occasionally unclear accountability and responsibility</li> </ul>

Source: *Natural Flood Management, Scottish government, 2012..*

## **Difficulties in allocating resources**

Significantly, nobody thought that implementing NFM would be cheap, despite part of the rationale being that in the long- term it will prove more cost- effective than relying solely on hard- engineering measures (Crichton, 2011). Interviewees in all sectors worried about lack of funding, citing lack of money as ‘the real challenge, the whole thing’ (Consultancy Manager, Local Authority).

The concern may arise from the difference in time perspectives between academic or policy analysts, and those implementing NFM. Analysts can consider multiple costs and benefits likely to be delivered to society over the long- term, a perspective which suggests that overall these measures will be more sustainable. By contrast, those charged with implementing flood risk management must relatively quickly allocate their scarce budgets, with no certainty about future budgets, in order to efficiently deliver reductions in flood risk.

‘...it's alright putting out these things and saying well this could be done, that could be done ... [but]...as you'll know all councils have got to be making savings over the next 3 years again so its.....you know,...what you can do with the budget that's there!’ (Flood Risk Management Team leader, Local Authority)

There are presently no funding schemes designed specifically to support NFM in Scotland. Access to funding for measures relevant to NFM may be possible via SEPA's Water Environment Fund, a significant funder of projects to restore river morphology. However, since this was set up to support the goal of ‘Good Ecological Status’ as required by the Water Framework Directive (2000/60/EC), the priorities of this fund may not always align with those of flood risk management. Furthermore, the Scottish Rural Development Programme may encourage some farmers to adopt certain measures relevant to NFM. However the main opportunities to fund NFM primarily arise from the public funds allocated to managing flood risks.

Choices about how to allocate this funding often depend on the decisions of Local Authorities. These must ensure their choices offer ‘best value- for- money’ by carrying out a Cost- Benefit Analysis according to a specified procedure (Scottish Government, 2012). This procedure often does not favour the long- term and sometimes imprecisely specified effects of NFM measures. In addition, associated benefits such as biodiversity gains, or recreational improvements can be difficult to account for in a Cost- Benefit Analysis. Furthermore, if the

measures cannot mitigate extreme flows with a high degree of certainty, they are unlikely to be prioritised since statutory bodies are obligated to favour measures that are accepted to provide protection against the hazards of severe flood events. NFM schemes typically offer to reduce and delay the peak flows of minor flood events, but cannot guarantee vulnerable areas will be protected during larger flood events, such as after a major storm (McIntyre et al, 2013).

NFM also entails different types of expenditures compared with those required to install hard-engineering measures. Costs arise from the need to collect, model, assess, and present new information in order to understand design schemes and identify their potential effects in specific situations. In addition, significant transaction costs arise from co-ordinating multiple partners, and engaging with new audiences. This may entail resourcing demands that change over time and accrue to a mixture of budget lines, in contrast to issuing a single contract for a large engineering project. For public sector organisations, there are often constraints on moving expenditure to different budget lines or time points. Furthermore, it is often easier to access one-off capital funding than to secure ongoing revenue to support these processes. Thus, some of the issues reported as ‘costs’ did not arise from the total financial resources needed, but were actually examples of constraints arising from pre-existing ways of working, such as fixed appraisal processes and pre-existing budget allocations.

### **Challenges in using evidence and handling uncertainty**

Uncertainty was cited as a major barrier by many of those in positions tasked with flood risk management. These included uncertainty about how to select and design measures for specific places, but also uncertainty about the effects of measures on hydrological regimes. For example, it is easier to model the effects of a concrete flood defence on peak flows than it is to model the effects of re-meandering a river.

The scientific evidence base on NFM is known to be incomplete (Parrott *et al.*, 2009). However, many times when uncertainty was cited, it also seemed to relate to not having confidence or familiarity with the knowledge based on NFM. Flood risk managers often have backgrounds in engineering, and also have practical experience only with designing structural measures. The same depth of knowledge and expertise does not apply to NFM. Therefore, planning and implementing NFM took many beyond their ‘comfort zone’.

‘A lot of local authority flood risk management personnel are engineers – in fact most of them will be engineers. So, this is ...kind of woolly biology for them, in a way ... you know, it's not something that they've traditionally been brought up with’. (Policy Officer, SEPA)

Selecting, designing, and monitoring NFM measures seemed a larger and less certain task than when doing the same for structural measures such as a concrete wall. New and complex models could help to plan and predict the effects of measures, but these were expensive and not always well trusted. A fear of additional unforeseen or unintended consequences from some NFM measures also contributed to reluctance in using them. In particular, there were worries that installation of woody debris in a stream could potentially exacerbate rather than reduce flooding, if it were to move downstream and accumulate to cause an obstruction at bridges or vulnerable infrastructure.

The understandings and perceptions of NFM held by the ‘general public’ at risk of flooding were also cited as a barrier by interviewees in statutory organisations. They stated that those at risk strongly preferred to see structural measures, such as flood barriers. This is interesting as the public does not usually have much direct say in decision- making on flood risk management: their formal involvement is mainly limited to consultation on the flood risk management plans and schemes (Spray *et al.*, 2009). However, they can put pressure on elected representatives in local government. Flooding is an emotive issue where interacting public and media discourses after flooding events are well known to catalyse national- level policy responses (e.g. Johnson *et al.*, 2005). However, it is unclear exactly if and how such pressures would influence flood risk management planning at the levels and cases considered by our respondents. It is possible that public pressure is cited to account for practitioner discomfort with these types of measures, or other institutional challenges to enabling NFM (Harries *et al.*, 2011).

### **Complexities of co- ordination**

Another requirement needed for NFM – and potentially another new demand on time and skills – is liaison within and between organisations. Flood management has always required some liaison between organisations. However, new partnerships have been needed to satisfy the demands of the Flood Risk Management (Scotland) Act 2009, which requires collaboration to plan for each flood ‘district’. These new planning districts cut across pre- existing

administrative and spatial boundaries, often entailing multiple new partnerships between SEPA and adjacent local authorities. Other organisations such as third sector organisations may also be collaborating for the first time on this topic. Such new partnerships and processes are intended to aid the adoption of strategic and ‘joint working’ approaches to planning flood risk management (SEPA, 2012), that should themselves aid consideration of NFM. Setting up the practicalities of co- ordination requires time and skills in partnership working. Bracken *et al.* (2016) have shown that in the Scotland–England border region, different organisations have already made excellent progress in networking. However, forming new partnerships to achieve statutory obligations for flood risk planning consumes much effort, at least in the short- term. This may have constrained opportunities to share and use new knowledge, and so reduced the likelihood of committing to NFM measures within the statutory plans.

Those individuals who lead efforts on flood risk management are often based in statutory agencies or regional government, reflecting the statutory drivers of planning for flood risk management. SEPA retains a strong role as it designated as the ‘competent authority’ for delivering flood risk management, although interviewees did not always share exactly the same understanding of the extent to which SEPA could and should be responsible for all parts of the process. This and other public agencies are also responsible for the delivery of other policies likely to affect water and catchment management. Many of these policies were designed without reference to the Floods Act, so may conflict with it. As a result, several instruments and legal requirements were perceived as problematic: notably, ‘Flood Prevention Orders’ authorised by The Flood Prevention (Scotland) Act 1961 give rights to install flood defence measures on privately- owned land, but interviewees often doubted whether these applied to NFM measures; while the Reservoirs (Scotland) Act (2011) may mean NFM projects must seek additional permissions (Wilkinson *et al.*, 2013). Some problems relate to how existing River Basin Management plans take no account of flooding, and these may lessen in future once the Water Framework Directive and Floods Directive planning timescales become harmonised (European Commission, 2015). However, there are potential mismatches in funding and planning cycles related to other policies and goals, even encompassing the organisations’ own funding and planning cycles. For example, Scottish Water works on a 6- year investment cycle, whereas Local Authorities plan annually or biannually. Such timing mismatches limit opportunities to jointly plan or share resources that might enable NFM.

Co- ordination could also be a challenge within organisations. For example, one interviewee from a public agency reflected: ‘we’ve quite tight timescales to work in, we needed [another

team] to do a review at a certain point ... because of other competing work priorities they couldn't do it till four months after they were asked to do it'. This shows that individuals could be willing to co- ordinate internally, but practically unable to do so because of their other commitments. Internal co- ordination is particularly important for large organisations and where departments, teams, or individuals differ in their specific objectives. This is the case for public sector agencies such as SEPA. Efforts to identify the mismatches and integrate the practical demands of different policies were already being made: significantly, SEPA had already designated a post as responsible for liaising and integrating the goals of the flooding policy with those goals for restoration under the Water Framework Directive. The challenges of co- ordination within one organisation may be less visible than the challenges of co- ordinating between organisations, but may be equally significant.

"Politicians and communities have either no or different figures," added an aid worker there.

But the Garissa County commissioner, Maalim Mohamed, said the government has a reliable network to assess needs and offer timely assistance. So far, Mohamed said, military helicopters have been used to supply food and non-food items to at least 34,000 flood-affected people there.

Experts have, in the past, attributed poorly coordinated and unnecessarily expensive disaster responses in Kenya to the lack of a disaster management policy. Such a policy would facilitate the creation of a national disaster management authority to coordinate all institutions' activities in disaster prevention, mitigation and response.

The policy, currently in draft form, recommends the creation of disaster trust funds, district contingency plans and insurance initiatives, among other measures.

On 18 April, Deputy President William Ruto announced that the government will table a bill in parliament on the establishment of a national disaster management authority. The authority will help to correct the current disaster management approach, which is based on guesswork and is often erroneous, Ruto said.

### **Poor infrastructure**

In the Tana River Delta area, for example, roads have been impassable, and military helicopters have been used to airlift dozens of people marooned by flood waters.

“Poor infrastructure, [and the] complete absence of roads in some settlements makes rescue and relief efforts difficult, costly [and] risky for aid workers,” said a KRCS disaster response team official in the region, who wished to remain anonymous.

“Central [and] county governments must strive to improve road networks in areas prone to calamities like floods, hunger and conflicts. It’s more costly to contain disasters and less costly to prevent them,” the KRCS official said.

Provision of assistance to the victims of a flood disaster may all be put in good plans by the relief agencies, however, the stumbling block could be the accessibility to the area demanding the need. One of the key features that may render this accessibility not possible are impassable roads that could either be caused by the floods or there is no such development at all. This becomes a very big challenge and may end up taking a lot more resources to reach the vulnerable communities than when it is accessible. For instance, in Nepal, because the areas are impassable due to the terrain, airlifting is the only option to get aid to the flood victims. According to UNHCR bulleting publication (05 November 2019), “MOGADISHU, Somalia - UNHCR, “The UN Refugee Agency, has airlifted vital humanitarian assistance to thousands of Somalis displaced by extraordinary flooding in the South-West and Hiirshabelle states of Somalia over the last two weeks.” The airlifting of relief items in such emergency situations is the best way to handle a disaster even-though it’s not the friendliest way to do especially when you look at the complexity of the whole process.

UNHCR was the first responder to lead delivery of humanitarian assistance to Belet Weyne in Hiirshabelle state where the impact of the floods had been highest, with a displacement of 230,000 men, women and children. “The first of ten cargo freighters landed yesterday, bringing in an initial six metric tons of what will amount to 3,500 urgently needed emergency kits that include jerry cans, soap, blankets, kitchen sets and plastic sheets.”

“When a country like Somalia, which has shown progress but remains fragile, experiences a natural disaster, there’s no time to wait,” said Johann Siffointe, UNHCR’s Representative in Somalia. “Immediate emergency response is crucial. The situation we are seeing today is dire. At the same time millions of Somalis are counting on the international community to remember

the vast humanitarian and development needs in the country that will still continue to need support once the cameras are gone.”



**UNHCR airlifts critical assistance to flood victims in Somalia.** © UNHCR/William Ejalu (2019).

UNHCR staff unload relief items from a plane. The items will be distributed to families affected by flooding in central Somalia. This kind of a situation demonstrates the importance of having easy access to the area of where needs are demanded in the challenging time. As stipulated before, the floods may have done a damage to the infrastructure, like roads which may render the transportation of relief items difficult. Some of the infrastructure may not necessarily be roads, but could be damaged bridges. The researcher has experience in those scenarios where during the planned distribution of relief items, in Mangochi district in the Eastern Region of the country, it was a challenge to access the areas of assistance, then a decision had to be made by the Malawi Red Cross, the Office of the District Commissioner and Office of the Commissioner for Disaster who were a team on the distribution of the relief items following heavy flooding in that area. Many people were displaced and lost a lot of their property and

crops. Among the distribution items were plastic sheets for shelter, cooking pots, water buckets, blankets, beans, maize just to mention a few.

As flood waters in the south of the country threaten to remain until April, the Malawi Red Cross Society is appealing for donations to support the thousands of people affected. Having responded quickly and successfully when the floods first struck in mid-January, the Malawi Red Cross Society now says it needs urgent support to safeguard the continued supply of aid to those most in need.

“The government announced that we would be expecting a lot of rain this year so we made a contingency plan to combat that problem,” said Lawson Kasamale, secretary general of the Malawi Red Cross Society. (Reliefweb, 2008). He continued to elaborate that having made a very good start, if supplies are not available in good time, we may not be able to continue to meet the needs of the affected people and then we could see serious problems arising.

Following heavy rains that hit Malawi lately, almost one third of the country has been affected with floods. It is estimated that approximately 70,000 people have been either displaced or are now homeless. The districts mainly affected are 15 and are from the south and northern region of the country. The floods have claimed 200 people as confirmed to be dead and some bodies haven't been recovered yet. The Malawi Defence Force has been engaged to help evacuate people by use of boats and helicopters despite challenges of bad weather especially in Nsanje and Chikhwawa. (DCA actalliance, n.d.).



Women getting relief items they received and had challenges in crossing flooded rivers in Nsanje district. (Relief aid from Dan Church Aid).



Credit: Flooding of the Buzi area, OCHA/ Saviano Abreu

Tropical cyclones Idai and Kenneth- Beira

Figure: .....Disaster Management Process



www.shutterstock.com · 1829643653

Source: Shutterstock (n.d.).

The process in disaster management can mean a number of ailments and dealt with differently at different times. In this case, the process has no direct link to any kind of disaster, it cuts across the board in its definition. It refers to the management of both the risk and the consequences of an event. In essence, disaster management is more than just response and relief or rehabilitation neither mitigation; it is a step by step process aimed at

reducing the negative impact and/or consequences of adverse events. Manesh et al (2017) state that floods may damage major infrastructures and result in the displacement of populations. Being prepared to provide an effective response to these disasters is a necessity for all levels of disaster management--strategic, tactical, and operational-in the European Union (EU). Therefore, in continuation, they say that opportunities for gaining enough knowledge, effective skill, and relevant expertise in the field of flood disaster management through training, should be improved.

## **EFFECTIVENESS OF POLICIES OR PRACTICES**

Disaster management is a relatively new domain of research and has received much attention after a series of natural disasters occurring after 1990s. Although a lot of literature is available as guideline/programs on different approaches to manage disasters fewer studies are available to test the effectiveness of the approaches in the long term outcomes.

Most of the empirical research is in the nature of case studies/descriptive accounts on the effectiveness of disaster management approaches. A few studies reported by the International Federation of Red Cross (IFRC) and Red Crescent Societies demonstrate effective disaster planning, preparation and dissemination of early warning information that led to a minimal death toll in the wake of the strongest cyclone to hit India in 14 years. In mid-October, 2013, Cyclone Phailin swept over the Bay of Bengal and across the eastern coast of India. Early warning alerts, disseminated four days before Phailin struck land, allowed for the evacuation of nearly 1.2 million people (GoO, 2013), 8 resulting in the largest evacuation operation in India in 23 years (IFRC, 2013).

Ganjam and Puri districts were two of the few districts that received special warnings from the OSDMA (Odisha State Disaster Management Authority) on 10 October, two days before the cyclone's landfall, to evacuate those living in mud houses and low lying areas before the morning of 12 October. A total of 21 lives were lost as a result of the cyclone (GoO, 2013) as compared to Cyclone 05B, which hit the same area in 1999, leaving 10,000 people dead. This event exhibits the importance, benefits and effectiveness of the use of early warning for a massive disaster. The United Nations approved of the state's well-functioning disaster risk reduction (DRR) system which includes preparedness activities by families, communities,

governments and non-governmental organisations (NGOs). The UN highlighted the state's efforts as a model for disaster management programmes globally (Senapati, 2013). This event exhibits the importance, benefits and effectiveness of the use of early warning for a massive disaster.

In another case, recognizing that children are the most vulnerable group when a natural hazard strikes, Bangladesh started a disaster risk reduction campaign entitled "Know Risk = No Risk", embarking on promoting disaster reduction education. A Learning Kit for children on Disaster Risk Reduction (DRR) was developed and adapted to local contexts and language. The learning kit was the first DRR learning material in the Bangla language that aimed to help children learn about disaster risk and take actions for risk reduction. This work is carried out under the leadership of Disaster Management Bureau (DMB) of Bangladesh Government on the campaign -Disaster Risk Reduction Begins at School. The initiative can be considered good practice because: (1) the learning kit was in the national language, which facilitated understanding and helped reach the largest number of people; (2) the kit, especially through the games, focused the students' attention in a fun and relaxed way, which made understanding and learning very easy (as reflected by students' comments above); (3) teachers and parents have been invited to use the kit to help children learn about disaster risks and help reduce disaster risk (UNISDR, 2007).

As stated by Haque et al. (2012) cyclone-related fatalities in Bangladesh has decreased many-fold over the past 40 years, from 500,000 deaths in 1970 to 4,234 in 2007. This can be seen for example during the Cyclone Sidr that drew near the country in 2007, in which approximately 4,500 people died compared with 138,000 during one of similar intensity in 1991. The author has attributed this decline in fatalities and injuries to improved defensive measures, including early warning systems, cyclone shelters, evacuation plans, coastal embankments, reforestation schemes and increased awareness and communication although he states a lack of scientific evidence at present of the impact of these measures on mortality.

## **CONCLUSION**

There has been a lot of literature on disaster management and more so to the subject under research. It has to be noted that disasters occur anywhere in the world both natural and human made. For the purpose of clarity, this research focused on natural disasters zeroing down to floods in particular. Attention has been on the country under study, Malawi Lower Shire Valley and collecting studies across other continents, especially Asia with partly Europe. The data and information collected has been widely presented with isolating different cases around the globe. Floods are an issue that has affected all continents and some countries have been having casualties in terms of people who lose their lives and property damage. Floods have caused millions of dollars loss to countries and continues to do so with the hottest issue under discussion of climate change. It's a phenomenon that the world has to live with and better planning and communication would be some of the key areas to address in order to reduce the fatality rate caused by floods. In addition to that, isolated areas that are susceptible to disasters have to be avoided at all cost in terms of habitation and other human activities. In terms of planning, governments need to engage those in the risky areas so that they be part of the solution to the problem. Their voices need to be heard and their contribution would be an assert to the long term development of those areas.

## **CHAPTER 3 METHODOLOGY**

### **3.1 Introduction**

As it is indicated in the title, this chapter includes the research methodology of the dissertation. In more details, in this part the author outlines the research strategy, the research method, the research approach, the methods of data collection, the selection of the sample, the research process, the type of data analysis, the ethical considerations and the research limitations of the project.

The whole purpose of this chapter was to provide an insight of the ways in which the quantitative and qualitative research data was collected from various sources, how the sampling was conducted on the premise of critically reviewing policies, practices and challenges in flood disaster management in Malawi. A case of the Lower Shire Valley. Information was also sought from other countries and continents who have similar challenges of floods whilst the whole idea was based on the critical areas of the study, thus the policies applied as well as the procedures. It was assumed that these instruments e.g. policies have an impact of the general management of a flood disaster management response programme, for its success or failure. In addition, policies are regarded as guiding instruments in any operating setting and therefore their availability is considered half work done as long as those operating players are conversant with them. Other scenarios have been picked during the research where host countries did not have policies for a very long time and how this impacted their independence in terms of disaster management and to be more precise, floods.

### **3.2 Justification for the paradigm and methodology**

The research gathered online and other relevant publication in relation to floods management, policies and procedures as well as primary data. It was observed that a number of literature on floods management came up with arguments on the application of relevant instruments in regards to floods management across the globe. Countries found themselves overwhelmed with a disaster and the coming in of many actors provided a very challenging scenario that saw the operation as agents administer their expertise in isolation. The justification was that the research was conducted in the pick of the covid 19 pandemic and there was no movement allowed across the borders. In addition, the data was to be collected from the rural setting mostly where victims live but due to poverty and no internet services in the villages, it was

difficult to have it implemented. However, due to time factor and the pandemic has no horizon to be seen as a sign of ending, the research had to move on. It is expected that the outcome of the research may slightly be affected because of the methodology applied. However, it managed to provide the needed answers to the objectives and research questions outlined in chapter 1.

The experience and interventions by different actors has provided an opportunity for the establishment of new local action plans, new coalitions amongst actors and as well Civil Society Organisations (CSO) acting as national advocates and at the same time influencing the government to change policies and plans to incorporate the new review data. (Perera et al., 2020).

### **3.3 (Research procedures)**

The study was conducted in an area in Malawi that is prone to floods on an annual basis. It was viewed to be the best across the country because it has experienced the most floods in the entire country history as people are consistently displaced by the floods and yet they still feel staying there is part of their life. Floods occur in various places in Malawi but the lower Shire is mostly affected. The reason is that it's a low lying area, with the main drainage river (Shire) from Lake Malawi passing through the two distinct districts of Chikhwawa and Nsanje. It also attracted interest as the catchment area for the study due to its population which is considerably high and the immense attraction it gives to flood disaster management players in the area during operations. For instance, the Malawi Red Cross Society has offices in both of these districts and are one of the first respondents to the scene all the time. Their volunteers are well trained in all areas of flood management skills and lifesaving skills.

All the data that was gathered was from documents and reports online as the presence of the covid-19 pandemic grossly affected the physical visits to the field for interviews and possible focus group discussions. However, questionnaires were able to be distributed and good responses were made in that regard. Communication was also a very big challenge and that significantly hampered all the efforts that would be deployed to access people with relevant information to the research but still with the minimal access available, information that was relevant to the research was collected.

All the relevant data was collected and then analysed in order to bring forward the answers to the questions to the research. The data came from various sources and mainly from countries that have been exposed to flood management and the application and adherence to instruments applied to manage floods disasters. There is strong evidence that there are some similarities in operating flood disaster management as well as some challenges, though they differ from one country to another. Interestingly, some international disaster response organisations have a mark in almost all the floods operations across the globe. On all players that one may list in every country, when you talk about floods, their name will always appear, that's the Red Cross and Médecins Sans Frontières (MSF).

### **3.4 Ethical considerations**

Ethics can generally be defined as the way one interacts and respects other people or society directly or indirectly without hurting their feelings. Editage Insights (2019) define research ethics as moral principles that guide researchers to conduct and report research without deception or intention to harm the participants of the study or members of the society as a whole, whether knowingly or unknowingly. Editage Insights continue to say that practicing ethical guidelines while conducting and reporting research is essential to establish the validity of your research.

All who participated in the research in documenting relevant data had their names not disclosed or neither the information that was filled in the questionnaire. It is also important to mention that any member who was part of the sample was free to withdraw if he or felt to do so, because being part of the data collection source was not a forced matter but rather a form of voluntarism.

### **3.5 CONCLUSION**

The research methodology carried out for the reviewing of the policies, practices and procedures in the lower Shire valley of Malawi was carried out in an effective and prudent manner. Along this line, it was found imperative to carry out the research process on the topic because of the importance it reflects on the general performance of the whole flood disaster management system. In addition, the whole idea of applying such instruments must have one goal, thus to save life and help victims to rehabilitate and make them live normal life again. In

view of the abilities to meet the outlined objectives, it was viewed as a principle factor to search for answers to the research topic because of the significance it carries to assist all those who are annually affected by floods in the lower Shire (Chikhwawa and Nsanje districts).

The answers to the research question helped to guide the process, the reason behind the need to make a closer look into the existing policies, practices and procedures in flood disaster management operations following the outlined objectives of the research. This was definitely one way or another to explain the current variances that players in flood disaster management experienced. The fact that lower Shire valley in Malawi experiences floods almost every year was a very good basis to understand the general aspects of the operations generally across the globe. The results elevated the belief that there is always room to improve the general management of floods by host countries and the rest of other players in the industry. The methodology carried out in this research process clearly showed the short comings in the available instruments in the implementation process in relation to performance measurement. This shifted the whole dimension in floods management and exposed the ideology that all operations are always successful and to better understand that different countries have or don't have instruments to guide them and they use borrowed ones, that being the challenge.

## **CHAPTER 4 DATA ANALYSIS, INTERPRETATION AND DISCUSSION**

### **4.1 INTRODUCTION**

The whole idea of data collection was to help provide a balanced presentation of information collected through analysis. Interpretation of the data collected and presented became a hallmark of the research because this was the time that a clear picture of the research became into effect. Without data, it would be a nightmare to come up with credible explanation of the data collected and how everything would be summed up in a plain language that is understandable. “The analysis of data can be done in descriptive, exploratory or confirmatory manner. The method to be used for data analysis depends on whether you are exploring a new idea in your research, or set out to prove some ideology already present.” (Dissertation India, n.d.).

In this Chapter, there will be a presentation of information and data that was collected from a number of countries in reference to their flood disaster response and management available instruments. In addition, information was also collected from government officials, the non-state actors operating in the area of study and from among some of the victims of the annual floods as part of the primary data. Questionnaires were used in this case as it was the best to do amidst the Covid-19 pandemic.

To sum it all, this chapter comprises the analysis, presentation and interpretation of the findings resulting from this study through documented information and distributed questionnaires. The analysis and interpretation of data was carried out in two phases. The first part, which is based on the general comparison of the policies, procedures deals with a qualitative analysis of data from the sample countries and then general commonality among the policies and finally with the data collected from the impact area of the research, the Lower Shire.

### **4.2 SUBJECTS**

### **4.3 PATTERNS OF DATA FOR EACH RESEARCH QUESTION**

The research questions guided and provided direction that would enable the work to be done consistently and encourage the flow of information.

- a. Identify countries (sample) with existing policies in regards to flood disaster management (*from literature*)

- b. Review the policies and procedures in their contextual aspect (*from literature*)
- c. Explore the link in the policy in the impact country of study with other players (*questionnaire*)
- d. Identify similarities and disparities amongst the policies (*from literature*)
- e. Provide recommendations on the execution of the instruments for a better flood disaster management (*questionnaire and literature*).
- f. What are the challenges non-state actors face in the implementation of the policies (*questionnaire*).

**a. Identify countries (sample) with existing policies in regards to flood disaster management (from literature).**

The following are countries whose instruments formed part of the research. The process of identifying them was done through use of small pieces of paper among sixty countries across the globe. A person was asked to pick small pieces of paper placed in a basket in which a country was written, the final was the list of the countries that have been picked for the study. The target was 10 countries.

The list is as follows:

1. Uganda Disaster Policy
2. Public Policy in Emergency Management
3. Nigeria National Disaster Framework
4. Zambia DM Operations Manual
5. Zambia DM Policy 2015
6. SA Disaster Framework
7. South Africa National Disaster-man-framework 2005
8. Queensland Disaster Management Policy Framework

9. UNICEF Annual Report 2017
10. World Disaster Report 2015 IFRC
11. Timo Leste Disaster Reduction Policy
12. Malawi National Disaster Management Policy
13. Disaster Management Policy Kenya (draft)
14. DRF IFRC 2013 Floods Report Malawi
15. Disaster Management in Nepal
16. NDS Edition 2015 Mauritius

The ones listed below are reports and the only one that stands out is the Public Policy in emergency management but still provided a lot of invaluable literature.

1. Public Policy in Emergency Management
2. UNICEF Annual Report 2017
3. World Disaster Report 2015 IFRC
4. DRF IFRC 2013 Floods Report Malawi

#### **SUMMARY OF THE DOCUMENTS**

<b>POLICY DOCUMENT</b>	<b>REPORTS</b>	<b>FRAMEWORKS</b>	<b>GENERAL</b>
Uganda	Malawi	Malawi	Unknown
Zambia	IFRC	Queensland	
Kenya	UNICEF	South Africa	
Nepal		Zambia	

Mauritius		Nigeria	
Timo Leste			
Malawi			
<b>7</b>	<b>3</b>	<b>5</b>	<b>1</b>

**b. Review the policies and procedures in their contextual aspect (from literature)**

The research looked at a number of areas in all the policies and procedures understudy. In fact, there was a scrutiny on the purpose of the policy that is the principal element of the instrument. That's the critical part because it gives the reason for its existence. On the other hand, the research had to focus on the role and functions of the non-governmental organisations and last but not least, the link between the government and the community.

**c. Explore the link in the policy in the impact country of study with other players (questionnaire)**

In general, all policies understudy where not exactly the same, they differed in a number of areas, however, there were some common factors that were identified in them, for instance, the purpose and the reason behind the government decided to embark on such an instrument. The designs and the arrangement of the policies were not the same either what contents they had of the alignment of facts. However, at the end of the day, they all bring to the same idea of managing floods and disasters in their countries and more especially in the impact areas and other affected areas in one way or another.

**d. Identify similarities and disparities amongst the policies (from literature)**

An in-depth scrutiny was conducted in all the policy documents that were understudy in order to establish their similarities and disparities among them. The whole idea was to look at the set-up so as to provide a clear vision on their establishment and meaning in order to drive the meaning to the victims and the future pending disasters. The process or how they were developed was not part of the research.

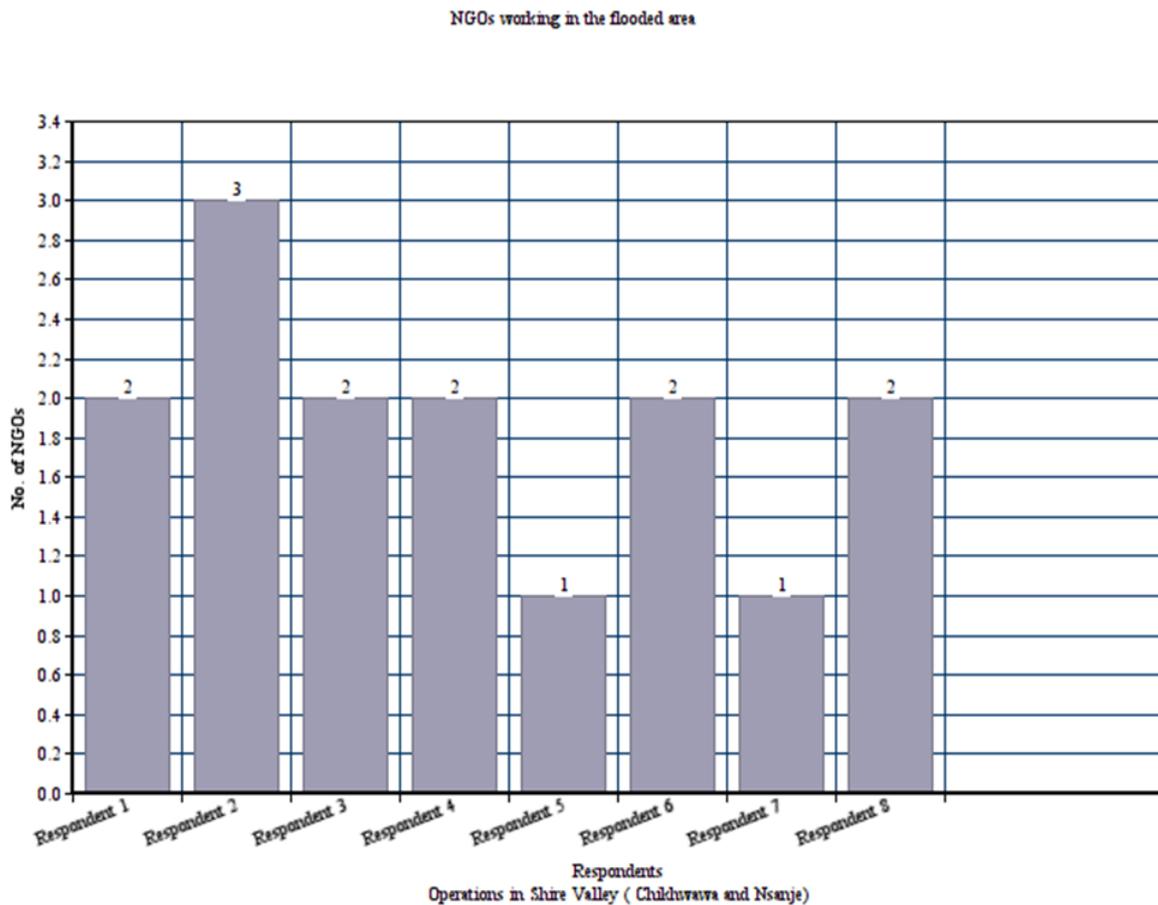
**e. What are the challenges non-state actors face in the implementation of the policies (questionnaire).**

Government establish any policies so that they are providers of a guide to help institutions and different players in a cross-section of the industries to apply the same principles in their operations.

“A government policy is a rule or principle that hopefully better guides decisions, resulting in positive outcomes that enhance the community or unit. Government policies contain the reasons things are to be done in a certain way and why. This leads to the development of procedures and protocols to see that policies are conducted in an appropriate manner. Procedures and protocols dictate the "how," "where," and "when" of how policies will be executed.” (Staff writer, n.d.).

**f. Provide recommendations on the execution of the instruments for a better flood disaster management (questionnaire and literature).**

Figure.....

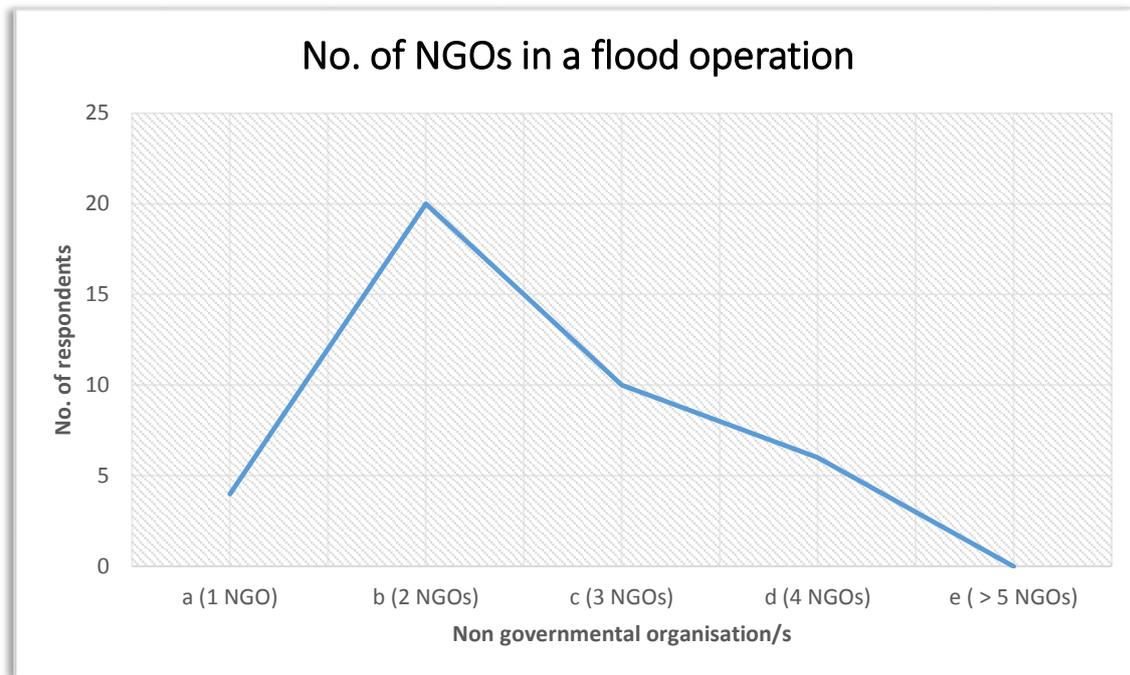


One of the key elements in any disaster is the demand for a number of players to work into all logistics to save lives and help victims come back to their normal life again. There are a number of life support things the human needs and among them are foods, shelter, water, cooking utensils just to mention but a few. These non-state actors have different missions and thus their support will be different too. The District Commissioner as the overall in-charge of the disaster response and hence he or she knows where aid should be directed to. The office of the DC has full information regarding available non state actors in the district and where they have community programmes. It is at times against this background that the office allocates aid according to who is where and what speciality they can give or what aid they have.

According to the results of the research, it has been found that 2 NGOs have been found to be operating in the same vicinity. Some respondents mentioned more than 2 but there could be a better explanation in that regard. On having 2 NGOs in the same area, it is possible that one could not manage according to human capital, the available material resources and different

areas of speciality. For instance, they could have food but have no shelter, so that NGO having shelter would definitely come in to fill-in the gap.

**Figure.....**



In a single operation, a number of NGOs may be involved in responding to a flood disaster in a specific area depending on the expertise or the allocation by the District Committee on disasters. However, the study has shown that 2 NGOs are always available in a single response to a disaster in an impact area. A single NGO may be available in an area but it is very rare because they have to be involved in the distribution and provision of safe drinking water at the same time. However, services like medical and potable water are normally provided at a central point where everyone in the area has access. For instance, a shift clinic or drilling water points. Having more than 5 NGOs in an impact area was a non-existent scenario according to the communities, which is a true reflection of what their experience is all about. Technically, it is a very good scenario to allow those few NGOs operate freely and reduce friction amongst themselves.

## SUMMARY OF THE DATA COLLECTION

	<b>QUESTIONNAIRES</b>	<b>NUMBER</b>
Sample size	Non state actors	<b>10</b>
	Government officials	<b>2</b>
	Community	<b>50</b>
	<b>INTERVIEWS</b>	
	Non state actors (NGOs)	<b>2</b>
<b>TOTAL</b>		<b>64</b>

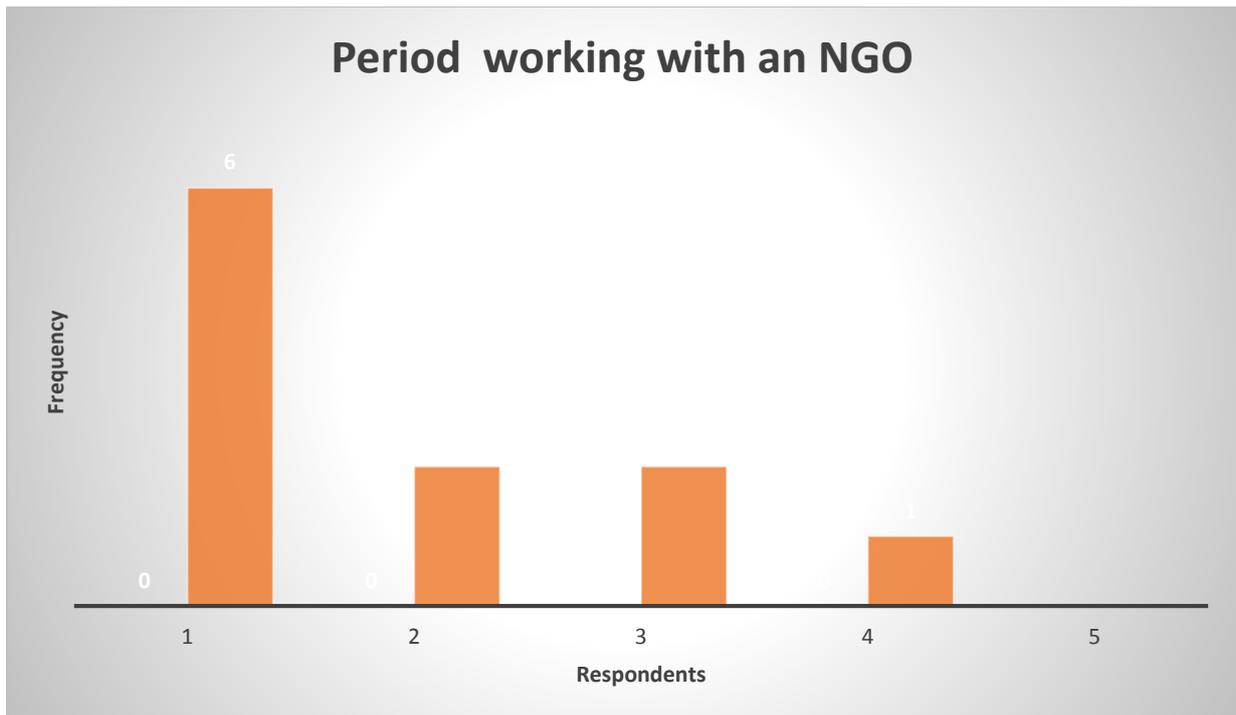
### 1. Are you engaged in flood disaster response?

**7 out of 10 (70%) said yes.**

The role of non-state actors/ non-governmental organisations in disaster response is well documented in a lot of literature and have most of the time being the first to arrive and the last to leave. There are a number of non-governmental organisations who are basically part of the operating teams in the Lower Shire valley. Some have offices based in Chikhwawa and others in Nsanje. For instance, the Malawi Red Cross has offices in both of these districts. The study has shown that 70% (7/10) of those who responded to the questionnaire are engaged in flood disaster response.

However, the 30% (3/10) indicated that they are not engaged in disaster response. But it looks that they have a role in the whole process especially towards the rehabilitation phase.

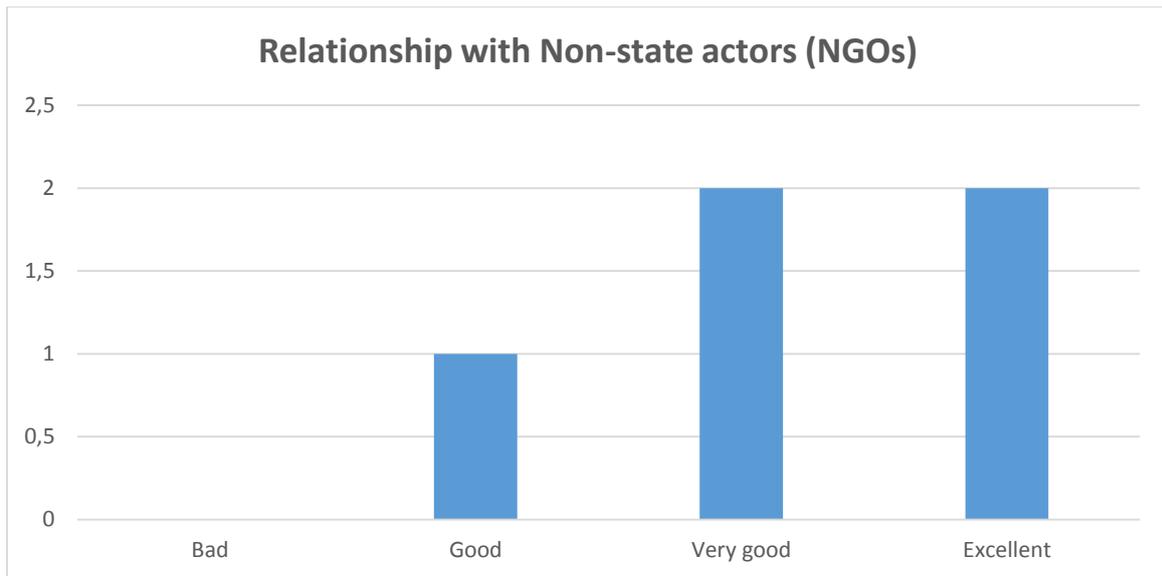
### 2. For how long? .....



**Figure.....**

Non-governmental organisations that have shown that have been operating in the area for quite some time are many according to the data collected. The responses show that more than 50% have been operating in the area in flood response, indicating the understanding and experience working in the area. 60% (6/10) indicated to have been operating in the area for over 11 years. One of the oldest one has been operating in the area for more than 40 years an indication of amassed experience.

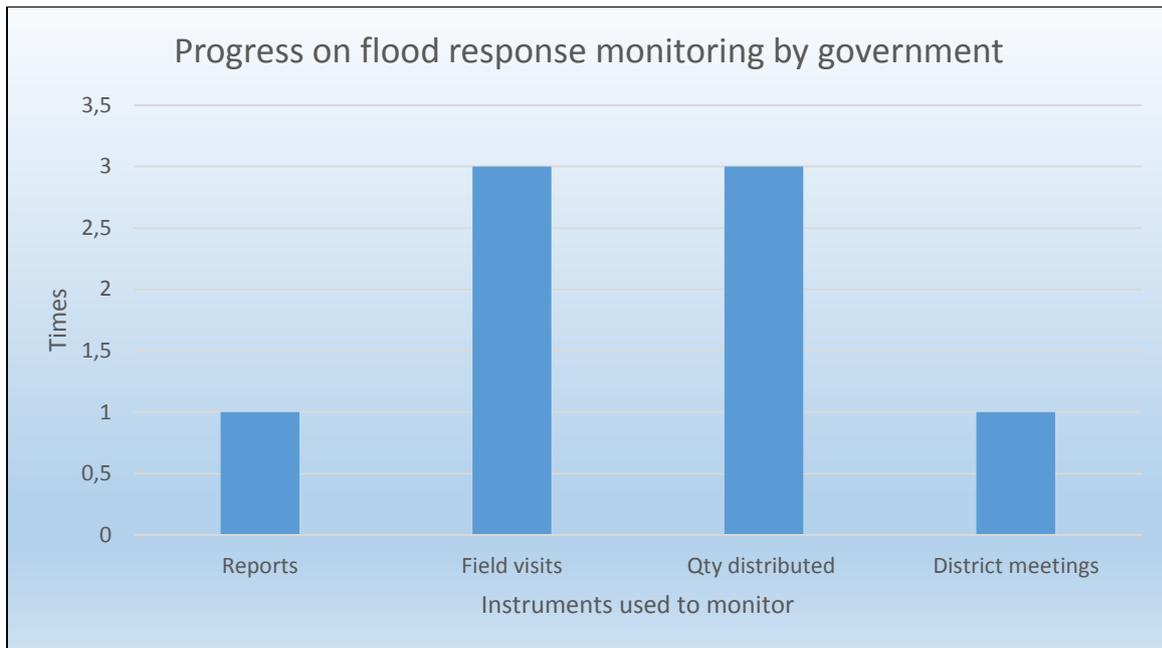
The remaining lot shows that 20 % have been in the area for at least 10 years and the remaining 20% have been operating in the area in the area up to 6 years. It's a long period though and are now conversant with the territory that are operating in.



**Figure .....**

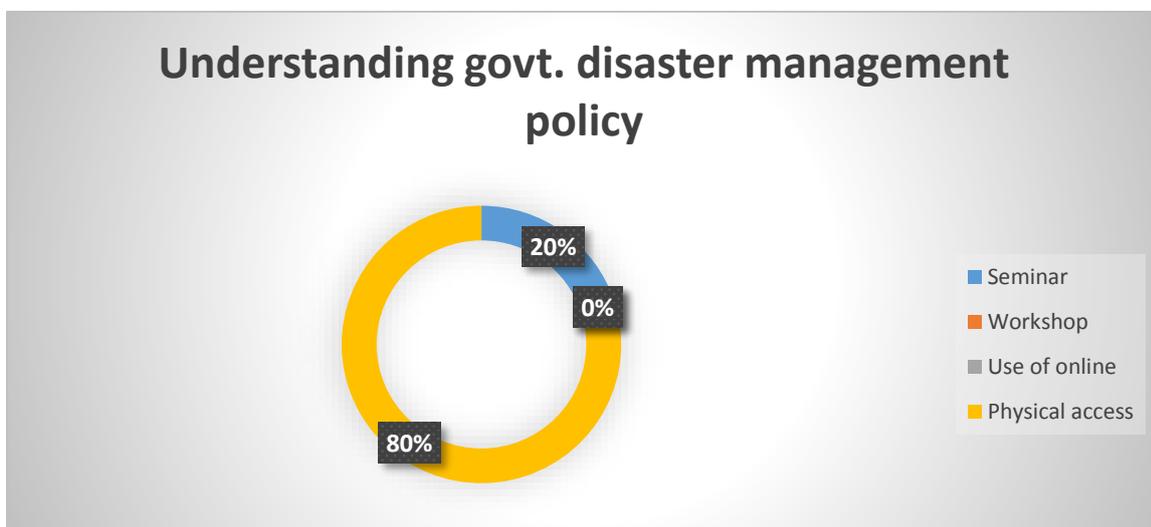
In any operation especially on flood disaster response, it demands a lot of cooperation if the project has to register success. It is an operation that brings a very good number of players to work by addressing different issues that have impacted people’s livelihoods. The data in the histogram indicates that generally there is very good relationship existing between the people on the ground and NGOs working in the area. It’s a reflection of the cordial relationship that exists and is tantamount to bring good operation results.

Its’ possible there are sporadic misunderstandings that may occur between NGOs and the beneficiaries, however, though this was not part of the study, has not been registered taking into account that “bad” nobody mentioned about that. It may also be deduced that NGOs have the skills and knowledge of good rapport with the community they are serving.



**Figure.....**

The government has the responsibility to coordinate all activities related to disaster response and hence they are accountable to the people just as the NGOs are to the government and the people they serve. Donations are given to governments to assist those who are in need but at the same time, it has its own resources that it puts into place to help the flood victims.

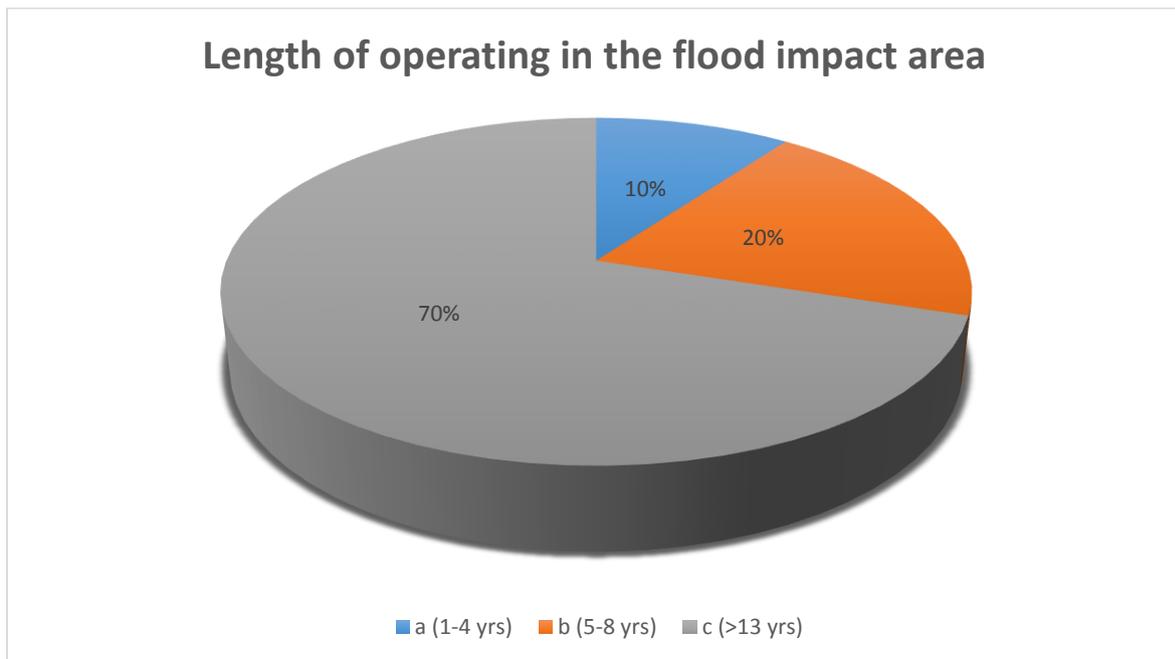


**Figure.....**

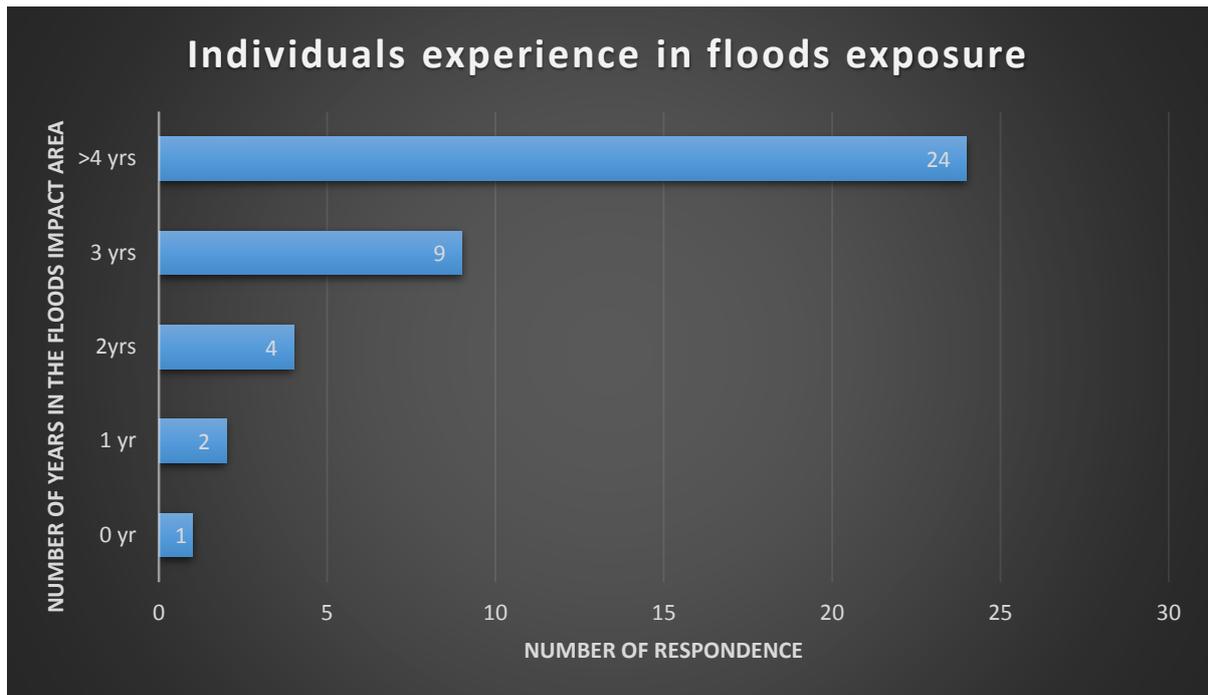
The data collected so far indicated that more non state actors have access to the disaster management policy through physical means it. The study did not go into detail to explore how they get it but there is a feeling that they get them somewhere, may be from other non-state

actors or from the department of disaster management. Only 20% of the respondents did show that they access the policy through a seminar organised by the department of disaster. This may also explain or suggest that the accessibility remains a challenge to non-state actors and there are very narrow access points to the policy.

**Figure.....**



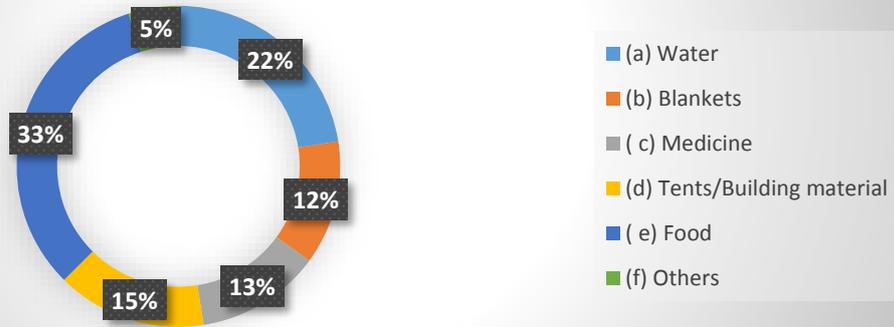
Institutional memory is very important in any setting if we are to go by recalling things that have happened in the past. The existence of floods in the impact area for almost annually need to be verified by the victims themselves. The study has shown that the majority (70%) of the respondents have been living in the impact area for more than 13 years. It is an indicator that the information that would be provided is reliable regarding floods in the area. Those who have been living in the area between 1-4 years represent only 10% may not seem much but is enough to explain something about the floods disasters.



**Figure.....**

In this particular study, the information provided by those who have been living in the area for some time, becomes very relevant because they have physically experience the floods occurring before their own eyes. They have seen animals, crops, houses, road infrastructure being destroyed to the floods. Therefore, according to the data collected, majority of the respondents have experience in the floods in the area and have been in the area for more than 4 years. 33 respondents have been living in the area from 3 years upwards, representing 83%. This provided a wide range of institutional memory as far as floods are concerned in the area.

## Assistance provided by NGOs during floods response

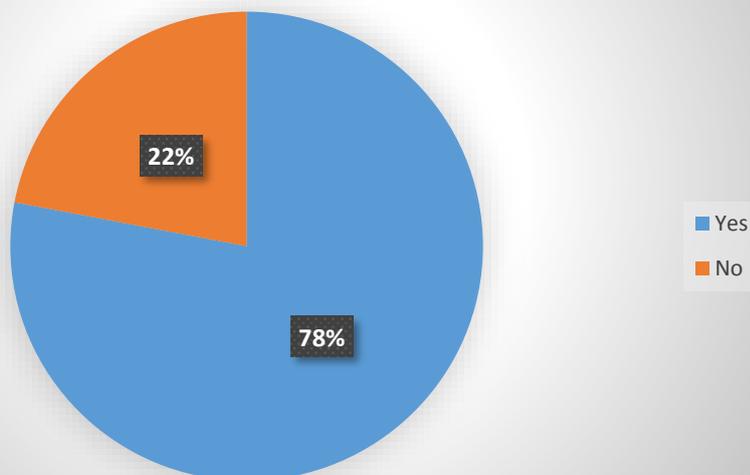


**Figure.....**

During the response to floods, the displaced communities lose a number of things apart from life, like food, animals, houses, crops from their gardens, beddings, kitchen utensils just to mention but a few. The coming in of different players signifies a time to help the IDPs with various items. The study has shown that the majority of non-state actors bring in food, which represents 33% from the respondents and then seconded by water, which is 22%.

### **Involvement of community in planning**

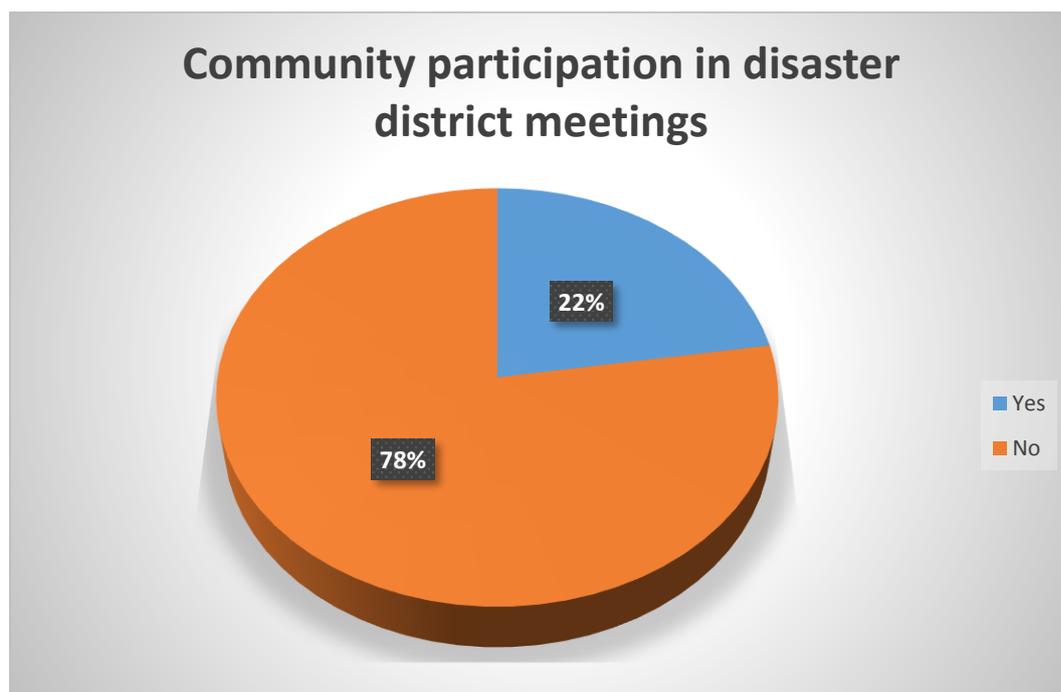
#### Involvement of community in response plans



**Figure.....**

There is a lot of evidence in literature that if we want real development that is meaningful to the people, there is a need to involve them in all the stages of development. They must be consulted and engaged in the entire process and that may translate into a meaningful development, a change in life, economically and socially. This can further be said that there is a highly likelihood of sustained growth because the users were part of the process and they still are. It is not a secret that 78% of the community respondents regard as their involvement in the planning process, by government or any other player needs the community in the process. The percentage shows they are often left out in the development of the plans and hence the need to do so. This is a very unfortunate scenario because their importance in the planning process is regarded as not worthy it and yet they are part of the solution to the floods response programme.

### Question 8



**Figure.....**

When we speak about community involvement in things that affect their lives, that's exactly what is all in community engagement. One of the pillars of Primary Health Care is community participation, because it brings in the understanding of their own problems and the possible solutions to them. In this case, the floods issue is not different, communities who are continuously subjected to floods, have their own coping mechanisms but may need technical

or professional assistance to bring to light how they can solve their problems. In this study, 78% of the community respondents showed that they are very much interested to be part of the meetings held at the district level. This is very interesting to pick in this study. Traditional Authorities are part of the meetings and may be the findings suggest that the communities are not given feedback by their chiefs. This is a very important point to note. “Successful participation in these pre-disaster, consensus-building emergency planning processes can lead to strengthened organisational to disasters. Communicating with the public is also important before a storm is forecast and hits land.”(Kapucu, 2008).

The remaining 22% of the respondents are not interested. There are a number of theories that may be drawn from this study, may be because of the English language used for the meetings, they cannot understand it or the attendance of the meetings may interfere with their daily life of fending food for their families.

### **Analysis of the policy**

Any policy is meant to be meaningful and developed with an idea of addressing a specific issue at hand. In addition, issues in any country or in any community are not always constant, they are bound to change in reference to the environment and that is why it is always necessary to review policies from time to time. “Outdated policies can leave your organization at risk. Old policies may fail to comply with new laws and regulations. They may not address new systems or technology, which can result in inconsistent practices.” (PowerDMS, 2020).

Numerous policies were looked at in this research including procedures so that there is a good comparability and understanding of the instruments. It is well documented that a policy cannot stand alone but rather will have procedures in place. In fact, the policy is just a general guideline whilst procedures come into specificity of the issue at hand.

“Policy review doesn’t always have to result in policy revision. Sometimes, you may need major changes and revisions, other times, you may just need to make a few small tweaks. And sometimes, the policy is just fine as it is, and no revisions are needed at all.” (PowerDMS, 2020).

According to the research, most of the respondents acknowledge that the policy has been available to most of the players in the industry. However, some also reported that they had seen

the policy but looks it lacked to focus on the current or present situation. A policy needs attention in order to remain relevant and this is exactly what some of the respondents alluded to. Unfortunately, the research did not incorporate the reasons behind mentioned on the policy.

### **Recommendations for the policy to make it better**

- Briefing sessions on the Disaster Management Policy and the working procedures have to be conducted regularly to make them more effective. This will allow players to be well versed with the instruments, each other but also connected to the government structure.
- Reviewing of the policy and procedures was seen to be of importance and provide an opportunity to the government to have views from across different stakeholders. This was seen to be of great help because the players on the ground are key users of the instruments.
- With the current pandemic of covid-19, The office of the President and Cabinet through the Department of Disaster and Preparedness must be aggressive and be robust in its approach to disasters especially floods and be able to find better solutions in the mostly affected areas.

### **Any post disaster meeting held?**

Information gathered has demonstrated that the interviewees have at some point attended a meeting that was aimed at making an evaluation of the response programme. All members who participated in the disaster response meeting organised by the District Coordinator, who is the District Commissioner. This is a very clear pictorial view on the part of the government to ensure that all stakeholders have a say and feeling on the whole programme. Much as it is not part of the study, the forum aims at understanding the challenges and success of their involvement in the entire life span of the programme. It is also a sign that those operating at district level were somehow working as a team within the District Executive Committee chaired by the District Commissioner.

“This is a technical body that provides advice to the Council and its service committees. It is composed of all Heads of Departments and NGO/Development partners in the district. The

District Executive has a membership of 50, chaired by the District Commissioner while the Director of Planning and Development is its secretary.” (Inter aide, n.d.).

## **4.4 CONCLUSION**

### **1) Overview of the problem**

In this Chapter 4, which was specifically for data collection, analysis and interpretation, provided a very good picture of the entire research. The data collected, was based on the technical and victims point of view so that both groups input are well balanced. It comprised those entrusted with managing the flood programme as a coordination team at District level, non-state actors and those who are resident of the impact area. The whole issue at hand is about the policy on flood disaster management and the practices and procedures. It was based on the understanding of the instruments and how that affects the entire operations, from the technical point of view and the victims’ side. It was a study based on the reviewing of the instruments available and how the understanding impacts the implementation process.

### **2) Data and modelling approach,**

Due to the difficult times the research was done of Covid-19 pandemic, efforts were done to collect as much data as possible. The study was able to access a number of instruments across the globe dealing with Disaster Floods. Taking into account that there are two districts in the Shire Valley, more focus was done on one district because both of them lay in the same geographical setting in a plain area.

All the questionnaires that were used in the study were collected data capturing was done to convert it into readable and meaningful information for use. The questionnaires were arranged according to their specific groups, for instance, all under community were placed in one group and then non-state actors or NGOs had their own group as well as the government employees. The extrapolation of the questionnaires was done manually by going through all the number 1s under government employees’ questionnaire. The process was replicated in all the other respondents groups.

This process of collecting and recording the data made it simpler to have a clear picture of

every detail recorded. Remember, all the respondents were picked through a simple random sampling method, though at the district headquarters, purposive sample method was applied due to the less numbers of officers available at the time of the study.

### **3) Results of research data analysis (plots, numbers, etc),**

There is a general picture in that the policy on disaster management is known and had been read by more than 70% of the respondents. However, reading and understanding it are two different things. The study shows that the policy is well understood by most of the respondents though a smaller percentage, 30% echoed the need to have it reviewed and shared amongst actors. Communities are impressed with the way aid comes in and the number of actors working during floods, however, they were not impressed with their role in the whole flood management system. They (.....) of the respondents showed that they need to part of the planning process as well as evaluation. Doing so, they say, will help them be part of the process and help some of the challenges the implementers face and what their key needs are.

### **4) Substantive conclusions. (Describe the problem. What substantive question are you trying to address?).**

The study was based on the review of the policies, procedures and practices in the area of Lower Shire Valley in regards to response to floods. The instruments used in the flood management are important because they help to standardise the approach and have a formal approach to helping the flood victims with humility. According to this study and that data collected, it has shown that the policy is available and a very good number of NGOs are aware of it though more than 50% need to have orientation to have a good understanding of it and a clearer idea on some issues relevant to the programme.

## **CHAPTER 5 CONCLUSION AND IMPLICATION**

### ***SUMMARY***

#### *A general opening sentence*

Generally, it demands a lot of understanding of various instruments used in flood disaster management or disaster management in general and their application in the right order by all is a recipe to a successful response programme. The government is the coordinator of any disaster response in a country and that's the standard to ensure that the policies, procedures and any other instruments are known and applied by various actors on the scene. What this means is that all actors in disaster response must be abreast of all the available instruments so that they speak one language and their executions be following the laid down local or international standards.

#### *Brief summary of key points*

The study has shown that the availability of the policy, practices and procedures are a key to well management flood disaster management response programmes. Taking into for a successful programme, the major players who are NGOs and the government have to work together very closely and share information as much as possible so that there is no confusion in the community they are serving. All said and done, the victims which is the community in this case, needs recognition throughout the planning, implementation and evaluation stages so that all the operations are meaningful.

### ***POSITION***

#### *The thesis statement revisited*

The research was based on reviewing the instruments used in the flood disaster operations in Malawi, in the Lower Shire Valley, thus the policies, the practices and procedures. Other instruments used in the research were sourced from other countries for information and substantiating available or collected data.

## **VALUE**

### *Practical implications*

The review study of the policy, practices and procedures of the Malawi Disaster Management is an eye opener reflecting the reality on the ground its functionality, understanding of its existence and its applicability. Having a policy is one thing and understanding it or interpreting it is another. One of the key issues identified during the study is the lack of accessibility by a number of actors on the ground, in addition, the orientation to all players has been highlighted as one of the ailing areas of its existence.

### *Topics for further research*

Despite the study that was conducted in regarding the policy document on Flood Disaster Management findings, it is important that future studies should focus on ensuring that the community have a role to play in the overall development process. Along those lines, more studies need to be done on the effectiveness of coordination amongst organisations working in disaster response. Last but not least, administratively, there is a need to do studies on the relevance of including the communities in the overall planning process, taking into account that they are part of the success story of the whole disaster response cycle. There is a lot of information that may be collected from the people that will prove relevant to the entire project management cycle.

### *A call for action*

It is the responsibility of the government to ensure that all the needed instruments for successful management of flood disasters are made known and appraised to all players, therefore more should be done to have a participatory process with all stakeholders.

## REFERENCES

Dissertation India (n.d.). Data analysis chapter. Dissertation India.

<http://www.dissertationindia.com/data-analysis-chapter.html>

Inter aide. (n.d.). The administrative bodies and traditional authorities. Hand pumps maintenance and improving water access-Malawi.

<http://www.interaide.org/watsan/malawi/index.php/2015/08/28/the-administrative-bodies-and-traditionnal-authorities/>

PowerDMS. (2020). Why it is important to review policies and procedures. Future of policy and compliance management 2020 report. PowerDMS. <https://www.powerdms.com/policy-learning-center/why-it-is-important-to-review-policies-and-procedures>

Staffwriter (n.d.). What is government policy. Livecareer.

<https://www.livecareer.com/resources/careers/planning/government-policy>

Editage Insights. (2019). What is the importance of research ethics? Editage Insights.

<https://www.editage.com/insights/importance-of-research-ethics>

Perera, D. et al., (2020). Identifying societal challenges in flood early warning systems. *International Journal of Disaster Risk Reduction*. pg 6.

<https://collections.unu.edu/eserv/UNU:7759/n1-s2.0-S2212420920312966-main.pdf>

Sileyew, K.J., (2019). Research design and methodology. Intechopen.

[https://www.researchgate.net/publication/335110374\\_Research\\_Design\\_and\\_Methodology](https://www.researchgate.net/publication/335110374_Research_Design_and_Methodology)

Raimundo I.M et al (2021). Struggles of cyclone Idai flood survivors inhabitants spaces of vulnerable and reconstructing their fractured livelihoods. Researchgate.

<https://www.researchgate.net/profile/Ines-Raimundo-2>

Donahue, A. K., & Joyce, P. G. (2001). A Framework for Analyzing Emergency Management with an Application to Federal Budgeting. *Public Administration Review*, 61(6), 728–740. <http://www.jstor.org/stable/3110007>

Kapucu, N., (2008, July). Collaborative emergency management: Better community organising, better public preparedness and response. *Disasters*. (p250). <https://www.researchgate.net/publication/5471522>

Altay, N., and Green III, W.G. (2006). OR/MS research in disaster operations management. Science direct. *European Journal of Operational Research*. November 2006. 175(1):475-493. DOI: [10.1016/j.ejor.2005.05.016](https://doi.org/10.1016/j.ejor.2005.05.016)

Alexander, D.E., (2002). Principles of emergency planning and management. Oxford University Press on Demand. [https://scholar.google.com/citations?view\\_op=view\\_citation&hl=en&user=F6l81zAAAAAJ&alert\\_preview\\_top\\_rm=2&citation\\_for\\_view=F6l81zAAAAAJ:d1gkVwhDpl0C](https://scholar.google.com/citations?view_op=view_citation&hl=en&user=F6l81zAAAAAJ&alert_preview_top_rm=2&citation_for_view=F6l81zAAAAAJ:d1gkVwhDpl0C)

Cutler, David M. (2006). “[An International Look at the Medical Care Financing Problem.](#)” *Issues in Health Care in the U.S. and Japan*, edited by David Wise and Naohiro Yashiro, 69-81. University of Chicago Press. <https://press.uchicago.edu/ucp/books/book/chicago/H/bo3773584.html>

UNISDR. (2009). UNISDR Terminology on Disaster Risk Reduction 2009. United Nations. [https://iwhw.boku.ac.at/LVA816343/Background\\_Material\\_2021/UNISDR%20Terminology%20on%20Disaster%20Risk%20Reduction\\_2009.pdf](https://iwhw.boku.ac.at/LVA816343/Background_Material_2021/UNISDR%20Terminology%20on%20Disaster%20Risk%20Reduction_2009.pdf)

Western, V., et al.(1993). Training package for geographic information systems in slope instability zonation. International institute for aerospace survey and earth sciences (ITC), 15(1):p245. <https://www.worldcat.org/title/gissiz-training-package-for-geographic-information-systems-in-slope-instability-zonation-vol-2-exercises/oclc/755122018>

Chhetri, M.B.P., (n.d.). Disaster management in Nepal: A review: *A country paper presentation: p22*. <https://www.adrc.asia/countryreport/NPL/NPLeng98/index.pdf>

Chan, N.W. (2003). Challenges in flood disasters management in Malaysia. Research paper. <https://www.iwra.org/member/congress/resource/3060518.pdf>

Scottish Government. (2012). Preparing Scotland: resilience guidance. Advice and guidance. Scottish government.

<https://www.webarchive.org.uk/wayback/archive/20210406115955/http://www.gov.scot/publications/preparing-scotland-scottish-guidance-resilience/>

Senapati, A. (October 15, 2013). After cyclone Phailin, villages face flood fury.

*Downtoearth*. <https://www.downtoearth.org.in/news/after-cyclone-phailin-villages-face-flood-fury--42453>

UNISDR. (2007). UNISDR Disaster Risk Reduction: 2007 Global Review. United Nations.

<https://www.undrr.org/publication/disaster-risk-reduction-2007-global-review>

Haque, A. N. (2012). Participatory integrated assessment of flood protection measures for climate adaptation in Dhaka. *Environment and Urbanisation*. SAGE Journals.

<https://journals.sagepub.com/doi/full/10.1177/0956247811433538>

Muriuki, D.W. (n.d.). Contribution of NGOs in Complex Emergencies. *Research report*.

[https://www.who.int/hac/events/tsunamiconf/presentations/2\\_14\\_nongovernmental\\_actors\\_muriuki\\_doc.pdf](https://www.who.int/hac/events/tsunamiconf/presentations/2_14_nongovernmental_actors_muriuki_doc.pdf)

IFRC (2008). Malawi Red Cross appeals for continued flood operation support. *Reliefweb*.

<https://reliefweb.int/report/malawi/malawi-red-cross-appeals-continued-flood-operation-support>

DCA actalliance (n.d.). *Floods and heavy rains in Malawi*. Danchurchaid. Retrieved January 16, 2022, from

<https://www.danchurchaid.org/articles/floods-and-heavy-rains-in-malawi>

Encyclopædia Britannica. (n.d.). *Pakistan Floods of 2010*. Britannica Academic. Retrieved

January 16, 2022, from <https://academic.eb.com/levels/collegiate/article/Pakistan-Floods-of-2010/571086>

The Commonwealth (n.d.). Member countries: Malawi. *The Commonwealth*. Retrieved June 15, 2020 from

<https://thecommonwealth.org/our-member-countries/malawi>

## **BIBLIOGRAPHY**

Bangkok, Thailand (2012).

Malawi National Disaster Risk Management Policy (2015).

Malawi National Statistical Office (2018).

Ministry of Social Solidarity (2008).

National Research Council (2007).

News 24 Newspaper (2004).

Zambia National Disaster Management Policy (2005).