A STUDY OF THE 2011 FLOODS ON HUMAN SECURITY IN NAMIBIA: A CASE STUDY OF THE OSHOOPALA INFORMAL SETTLEMENT IN OSHAKATI

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ABSTRACT

This thesis is a result of a study carried out to determine the extent to which the 2011 floods affected basic human security needs in the Oshoopala informal settlement in the Oshana region of northern Namibia. Northern Namibia experienced severe floods in the seasons 2007-2008, 2009-2010 and 2011. The contemporary human security concept has been broadened to encompass issues such as natural disasters that include floods, drought and disease because of their impact on human survival in comparison to effects of war, genocide and terrorism. The study adopted a qualitative research design, in which interviews and document analysis were employed to collect data. The study revealed that the 2011 flooding had devastating effects on the lives and livelihoods of the inhabitants of the Oshoopala informal settlement. The major cause of the flooding was attributed to the location of the Oshoopala informal settlement in a low-lying area where water collects. Notable in the study is that no life was lost as a direct result of floods. However, people had limited basic needs such as food, education, shelter and good sanitary facilities. This study concluded that the 2011 floods had an adverse impact on the human security needs of the inhabitants of the Oshoopala informal settlement. The study recommends a plan of action involving the Oshakati Town Council, the Government, the Disaster and Risk Management Department and the affected community to find a lasting solution to flood-related human insecurities in the Oshoopala informal settlements and other places.

TABLE OF CONTENTS

CHAPTER 2

LITERATURE REVIEW

CHAPTER 3

METHODOLOGY

CHAPTER 4

DATA PRESENTATION AND DISCUSSION OF FINDINGS

CHAPTER 5

CONCLUSION AND RECOMMENDATION

7. APPENDICES

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DEDICATION

This thesis is dedicated to my family: my husband who is the a pillar of my strength, and my children, Queen Monturo, Senahe Christopher and Asser, who bring so much joy to my life. To my late grandfather, Stephafanus Naunyango, I will always remember you in my life; also to my mother Hulda Nashipe and elder sister Analisa.

DECLARATION

I hereby declare that the work contained in this thesis is a true reflection of my own research and will not be submitted for any other degree in any other institution of higher learning. Further, that all reference materials have been acknowledged in the bibliography.

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Sarafina Tshilunga Date

LIST OF TABLES AND FIGURES

LIST OF ABBREVIATIONS / ACRONYMS

AU	-	African Union
CBD	-	Convention on Biological Diversity
CBNRM	-	Community Based Natural Resource Management
CHS	-	Commission on Human Security
CSSDCA	-	Conference on Security, Stability, Development and Cooperation in Africa
DDRM	-	Directorate of Disaster Risk Management
DREF	-	Disaster Relief Emergency Fund
DRM	-	Disaster Risk Management
EFD	-	European Flood Directive
EXCIMAP	-	European Exchange Circle Mapping
FCCC	-	Framework Convention on Climate Change
GHG	-	Green House Gas
IFPRI	-	International Food Policy Research Institute
IPCC	-	Inter-Governmental Panel on Climate Change
MAWF	-	Ministry of Agriculture and Forestry
MDG1	-	Millennium Development Goal 1
MET	-	Ministry of Environment and Tourism
MFMR	-	Ministry of Fisheries and Marine Resources
MHSS	-	Ministry of Health and Social Services
MME	-	Ministry of Mines and Energy
MLR	-	Ministry of Land and Resettlements

MRLGHRD	-	Ministry of Regional and Local Government, Housing and Rural Development
NEWU	-	Namibia Early Warning and Food Information Unit
NRA	-	Natural Resource Accounts
NRCS	-	National Red Cross Society
OAU	-	Organisation of African Unity
OCHA	-	Coordination of Humanitarian Affairs
OPM	-	Office of the Prime Minister
RAP	-	Resettlement Action Plan
RPFS	-	Regional Programme for Food Security
RWSP	-	Regional Water Policy and Regional Strategy Medium
SADC	-	Southern African Development Community
UN	-	United Nations
UNCCD	-	The United Nations Convention to Combat Desertification
UNCED	-	United Nations Conference on Environment and Development
UNDP	-	United Nations Development Plan
UNFCCC	-	United Nations Framework Convention for Climate Change
USAID	-	US Agency for International Development
WHO	-	World Health Organization
WOMP	-	World Order Models Project

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 Introduction

This chapter provides a brief background of the study and further presents the statement of the problem, research question, research objectives, and significance of the study and associated limitations of the study.

Floods have become a recurrent problem in Namibia. For instance, since March 2009, flooding caused by heavy rains affected six regions in northern Namibia (Zambezi, Kavango, Oshana, Oshikoto, Ohangwena and Omusati). The floods disrupted economic activities as people could not move about to carry out their normal duties. Indeed, access to health facilities and schools was cut off, urban sewage systems overflowed with the inundation of water supply and sewage stations, and electricity provision was compromised in the six affected regions (Government of Namibia, 2009).

Flooding is one of the most destructive types of natural disasters that strike humans and their livelihoods around the world. There are different types of floods that affect different cities, towns and areas in different forms. Flooding takes place when water from rivers, streams and storm-water tunnels leaves its normal channel. It exceeds the capacity of one of these systems, and overflows into the space that the population uses. Most of the time it is mixed with other dangerous objects such as waste, rocks, uprooted trees and other unspecified dangerous objects (Kandjinga, 2011).

The Conference on Security, Stability, Development and Cooperation in Africa (CSSDCA), held in Kampala, in 1991, adopted by the then Organisation of African Unity (OAU) stated that the concept of security goes beyond military considerations. In this regard, the UN concept of human security is reinforced by the African Union (AU) under freedom from "want", "fear" and "hunger".

The UN concept of human security must be tied to the security of the individual citizen to live in peace and to have access to necessities of life while fully participating in the affairs of the society with freedom and enjoying all fundamental human rights. When floods strike, people affected lose access to many necessities such as education, health facilities and jobs, just to mention a few. Following the concept of OAU on human security, the hypothesis is that floods pose some degree of human insecurity.

In 2011, as was predicted by the Department of Meteorological Services, the country was hit by heavy rains from January to April, with the concentration in the central and the northern regions. A situation of this kind compelled the government to develop risk management strategies. However, in order to develop risk management strategies, there is a need to shift from the top-down approach to a community participatory approach. Thus, this study focuses on a small local community.

1.2 Background

This research is undertaken to examine the impact of the 2011 floods on families living in the informal settlements of Oshoopala in Oshakati, Oshana Region. The study focuses on establishing how the effects of the 2011 floods affected the basic human security needs of the target study population. According to the survey conducted by the University of Namibia

(2011), Oshoopala is one of the oldest informal settlements of Oshakati town, and one of the most affected by the floods since 2008. It is home to about 3,000 inhabitants.

In Namibia, most of the poor and vulnerable people live in informal settlements and rural areas. On the attainment of independence, the laws that restricted movement of people and establishment of settlements were removed and people began to move freely within the boundaries of the country. As a result, many previously disadvantaged people flocked to the cities and ended up in informal settlements because they saw cities as places that offered great opportunities.

The formation of informal settlements caused pressure on the government as far as the provision of services was concerned. Putting in place a grand policy in the form of Vision 2030 was, therefore, an attempt by the Government to address this and other problems the nation faced.

Northern Namibia had no dry seasons during the 2009/2010 and 2010/2011 (Figure 1). According to AMESD (2011), this meant that during the two seasons (2009/10 and 2010/11) northern Namibia and, in fact, most of Namibia received well above normal rains.

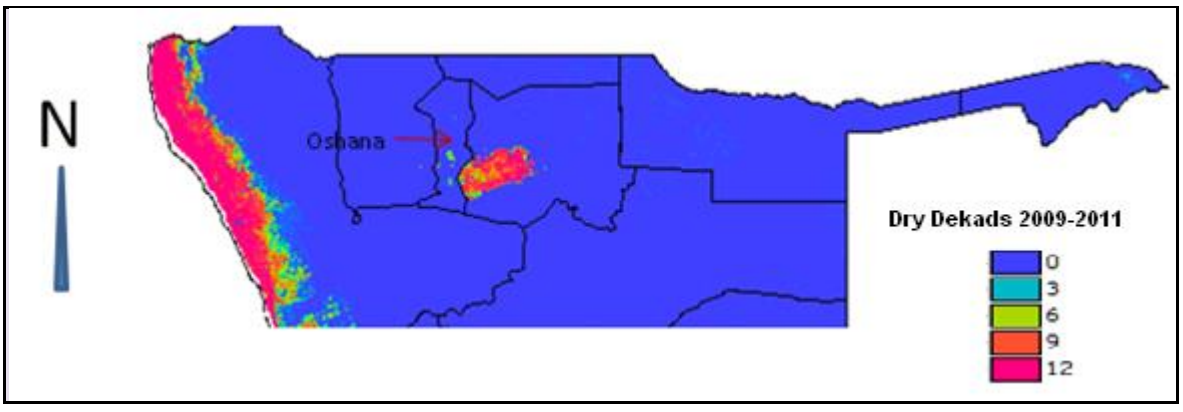

Figure 1: Northern Namibia Dry Dekads 2009-2011 (AMESD, 2011).

Figure 1 also shows the Oshana region, where the Oshoopala informal settlement is located. The region received a lot of rain during the 2009/2010 and 2010/2011 seasons. For the Oshana region, the floods had negative impacts on both human and food security.

1.3 Statement of the problem

The purpose of this research was to explore the extent to which the aspects of the human security were affected by the 2011 floods on the Oshoopala informal settlement. Namibia has had to contend with flooding of severe magnitudes for the seasons 2007-2008, 2009-2010 and 2011. In comparison to other flooding events in the past, the 2011 floods were the severest. President Pohamba declared a state-of-emergency on 29 March 2011 (United Nations Office for Coordination of Humanitarian Affairs, 2011). Namibia lacks adequate financial and human capacity to deal with climate change and its effects such as floods. It is against this background of recurrent flooding in northern Namibia that this study finds it important to assess the extent, to which the human security needs have been impacted by the 2011 floods.

As a result of recurrent flooding, the inhabitants of the Oshoopala informal settlement were among those who had to be relocated to and from high ground since 2007. The research, therefore, found it imperative to study on the recurrent floods at the level of informal settlements to find out how they affect the basic security needs of the people in the proposed study area. This study is contributing to the body of knowledge on floods and resultant impacts on the security of the households in the urban informal settlements.

1.4 The research question

Namibia has experienced floods since 2009, particularly in the northern parts. Among communities that had to be relocated to and from high ground as a result of these recurrent floods, are communities from the urban informal settlements. Oshoopala informal settlement is one of the settlements that have had inhabitants relocated back and forth too. Given the severity of the 2011 floods, the question is therefore: "To what extent did the 2011 floods impact on the security dimension of the inhabitants of the Oshoopala informal settlement area?"

1.5 Objectives of the study

The study had the following objectives:

- To explore the extent to which human security needs were affected by the 2011 floods.
- To recommend possible interventions that could mitigate the impact of future floods on the human security of these inhabitants.

1.6 Significance of the study

The study provides a deeper understanding of the contributing factors affecting people at the Oshoopala information settlement in Oshakati in terms of the 2011 floods and has made suggestions that could help in improving the human security factors at the Oshoopala informal settlement. It also provides information to the policy-makers and decision-makers to help them come up with possible strategies to address the problem of floods in the area. It can serve as a guiding tool to future researchers, who would wish to conduct further research on the 2011 floods in Namibia or elsewhere in Africa.

1.7 Limitations

The study could have covered more than one flood affected informal settlement in Oshakati, but due to financial constraints as well as the limited time, the study only selected the Oshoopala informal settlement in Oshakati. It could have been difficult to secure appointments with all the targeted officials, but because proper consideration was made, these limitations were overcome by securing appointments well in advance and clarifying the purpose of the study, and informed consent was granted by all interviewees.

1.8 Conclusion

The human security concept has been broadened to accommodate issues such as natural disasters, hunger and disease because of their impact on human survival in comparison to effects of war, genocide and terrorism. Flooding is one of the most destructive types of natural disasters that strike humans and their livelihoods around the world. Thus, the concept of security goes beyond military considerations. In this regard, the UN concept of human security is reinforced by the African Union (AU) under freedom from “want”, “fear” and “hunger”, consequently when floods strike, people affected lose access to many basic necessities, such as education, health facilities and jobs just to mention a few.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

A literature review is an account of what has been published on a topic by accredited scholars and researchers. It is a secondary source and as such does not report any new or original experimental work. A literature review can also be interpreted as a review of an abstract accomplishment. More often a literature review is associated with academic-oriented literature, such as a thesis. Its main goals are to situate the current study within the body of literature and to provide context for the particular reader (Newman, 2007).

The main objectives of this research are to assess the impacts of the 2011 floods on the Oshoopala informal settlement in the Oshana region. In order to discuss this issue coherently, it is necessary to review underlying concepts and definitions. Further, it is imperative to discuss a wider scholarly understanding of what is meant by ‘floods’, ‘human security’ and ‘climate change’.

In this section, the definitions and concepts are presented. In addition, the general understanding on floods and their effects on some parts of the region, as well as the 2011 floods in Namibia, is discussed. Climate change, human security and relevant policies are explored in detail.

2.2 Definitions and concepts

2.2.1 Floods

Floods are part of the natural water cycle or a "hydrological cycle". In this natural cycle, the energy of the sun causes water to evaporate and form clouds, which move inland and become rain. This rain will then runoff either directly through the river systems or is absorbed into the soil to later form groundwater flow (Heynes, *et al.*, 2002).

Flooding is the unusual presence of water on land to a depth, which affects normal activities. Flooding can arise from:

• Overflowing rivers (river flooding);

• Heavy rainfall over a short duration (flash floods); or

• An unusual inflow of seawater onto land (ocean flooding).

Ocean flooding can be caused by storms such as hurricanes (storm surge), high tides (tidal flooding), seismic events (tsunamis) or large landslides (sometimes also called tsunami). River and flash flooding usually result from abnormally high rainfall over a relatively short period: hours for flash floods; days for river floods. Heavy rainfall during the rainy season can lead to floods, which can affect rivers and may also occur as flash flooding (Benjamin, et al. 2012).

2.2.2 Human security

One of the most comprehensive definitions of human security comes from the so-called Dóchas concept in Ireland in pursuit of aligning foreign policy to the concept of human security. (Dóchas, 2007), defined human security as follows:

Human Security is concerned with the safety of people from both violent and non-violent threats. It focuses attention on the need to protect people, their rights and their freedoms, and on the need for them to be able to influence decisions that affect those rights. (Dóchas, 2007), summarised the concept of human security as follows:

- Freedom from fear;
- Freedom from want; and
- Freedom to act on one's own behalf.

The human security concept stems from dissatisfaction with prevailing concepts of development and security, which over-emphasised economics and national borders respectively. The concept of 'human security' can be traced back to the 1945 United Nations UN Charter, which mentions "freedom from want" and "freedom from fear" as aims the international community should aspire to. The UN should protect its members from different types of threats, including such threats as hunger and disease (UN, 2007).

The concept of 'human security' is contested – even among its supporters – although some broad observations are possible. Human security suggests that security policy and security analysis, if they are to be effective and legitimate, must focus on the individual as the referent and primary beneficiary. In broad terms, human security is "freedom from want" and "freedom from fear": positive and negative rights as they relate to threats to core individual needs. Human security is normative; it argues that there is an ethical responsibility to (re)orient security around the individual in line with internationally recognised standards of human rights and governance. Much human security scholarship is, therefore, explicitly or implicitly underpinned by a solidarity commitment to moral obligation, and some is cosmopolitan in ethical orientation (Newman, 2007).

The Conference on Security, Stability, Development and Cooperation in Africa (CSSDCA), held in Kampala in 1991, and adopted by the OAU in 1999, stated that the concept of security goes beyond military considerations. The concept must be tied to the security of the individual citizen to live in peace and to have access to basic necessities of life while fully participating in the affairs of the society with freedom and enjoying all fundamental human rights.

2.2.3 Climate change

Climate change refers to a collection of large-scale long-term changes to global climate such as increases in temperature, rainfall and increased frequency of drought and flooding due to significant departure of the earth's climate from average weather conditions. There is sufficient scientific evidence that although climate may vary naturally, human activities, mainly through the use of fossil fuels and changes in land use patterns due to rapid increase in global human population, have caused significant changes in global climate. These human activities have contributed greenhouse gases such as methane, nitrous oxide and carbon dioxide that have affected the climate (MET, 2009). Climate change, according to the Intergovernmental Panel on Climate Change (IPCC), refers to any change in climate, whether due to natural variability or as a result of human activity.

This definition differs from that of the Framework Convention on Climate Change (FCCC), where climate change refers to a change of climate attributed directly or indirectly to human activities that alter the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods (IPCC, 2007).

A major difficulty in dealing with the concept of climate change is due to considerable uncertainty about the rate and nature of global warming and the consequential rate and nature of its effects, and furthermore, the effects of changes in climate variables on human and economic development. However, the understanding of the physical, biological, and social sciences of climate change impacts are now more or less well understood.

The Global Humanitarian Forum report recognises the uncertainty and difficulties inherent in quantifying climate change impacts on development and the risks. It attempts to draw together and triangulate across a wide range of information sources, including IPCC and other peer-reviewed and more conservative scientific reports and models, insurance industry information, international organisation reports, and case studies. The reports further state that during 2008/2009, about 325 million people were affected annually by climate change, with a further 315 million annual deaths due to climate change (these may be compared with annual global estimates of 24 million people needing medical attention after traffic accidents in year 2004 and 247 million cases of malaria in during 2006, and further 22 million deaths from the Indian Ocean tsunami in 2006 (Global Humanitarian Forum, 2009).

The report further revealed that the above stated figures were calculated assuming that 40% of increased weather events and deaths caused by environmental degradation were attributable to climate change. By 2008, global economic losses from climate change were estimated to be around US$125 billion and these were expected to more than double between 2010 and 2030 (Global Humanitarian Forum, 2009).

(Figure 2).

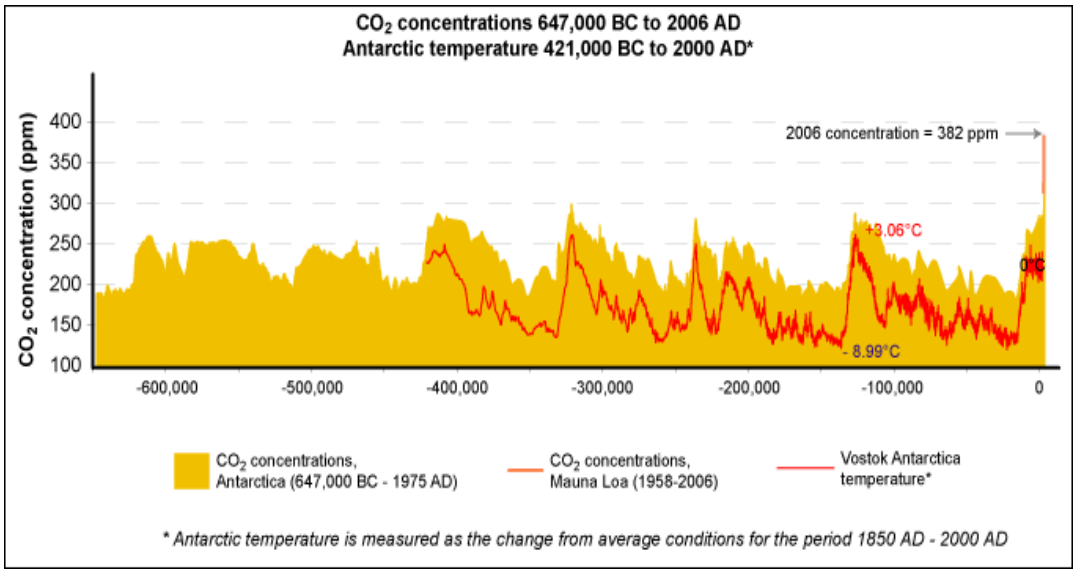

Figure 2: Changes in Carbon Dioxide and Temperature (EPA, 2005).

Figure 2 above indicates that there is a close link between carbon dioxide (CO_2) concentration in the atmosphere and temperature increase fluctuations, in temperature (red line) and in the atmospheric concentration of carbon dioxide (yellow) over the past 649,000 years. The vertical red bar at the end is the increase in atmospheric carbon dioxide levels over the past two centuries and before 2007.

According to information from the Ministry of Environment and Tourism (MET), "Namibia is vulnerable to climate change for several reasons. Its geographic location within the subtropical atmospheric high-pressure zone contributes to its aridity. Namibia receives low but highly variable rainfall (25-700mm) and is characterised by high temperatures that may range from 300ºC to 400ºC (may reach –100ºC)" (Heynes, *et al.*, 2002). The rates of evaporation are high (with only 1% of rainfall available to recharge ground water). Namibia also experiences natural inter-annual and inter-decadal climatic variability. These factors interact to make Namibia the driest country south of the Sahara (MET, 2002).

The diverse rangelands, arable land, and mineral deposits make up valuable natural resource bases on which the economy of Namibia depends (MET, 2007). These diverse ecosystems provide goods and services that are valuable to both the livelihoods of all Namibians at local as well as national levels. Livestock production (beef and small stock [sheep and goats]) is the most common land use on rangelands in Namibia although game farming and mixed wildlife/livestock production is being promoted and is a growing industry (MET, 2002).

In Namibia, the majority of the population (about 61%) live in rural areas and depend on agriculture for their subsistence (MET, 2002). Environment-based tourism is a fast growing and significant industry. In Namibia, biodiversity-based enterprises including the capture and trade in bush meat, skins and other products, hunting, etc., contribute to the economy. Namibia is a world leader in the Community Based Natural Resource Management (CBNRM) programme that addresses both sustainable natural resource management and use and socio-economic development (Long, 2004).

The conservancy approach has resulted in an increase in wildlife, generation of income for local communities and creation of new jobs (NACSO, 2007). For instance, in 2006, consumptive use of wildlife generated about N$8.3 million from conservancies in Namibia. The above indicate that the economy of Namibia largely depends on its natural resources. Most predicted impacts of climate change will adversely affect natural resources. This makes Namibia very vulnerable to impacts of climate change (MET, 2009).

This research is pivoted around one key concept: “human security”, which embraces many other concepts that are pertinent for the purpose of this study such as food and environmental

security as they are also affected by the floods. In order to discuss these issues coherently, it is necessary to understand how floods occur and how they affect human security.

2.3 Floods in general

Floods happen when the capacity of the rivers is not enough to carry the water that has entered the river network, and the banks overflow. The area that gets inundated quite regularly is called a floodplain. Floods are caused by prolonged or heavy rainfall. Cyclones bring huge amounts of moisture inland from the ocean and are a major cause of floods, particularly in coastal areas. Thunderstorms are relatively small in area, but can produce very intense rainfall that can cause floods in smaller streams.

Larger storm systems that form around moist air masses moving across the country cause floods over large inland areas. Other, less common but significant causes are storm surges and tsunamis, which involve a rapid rise of the sea. Several factors determine the size of flooding including: rainfall intensity (the rate of rainfall) and duration (how long the rain lasts); how dry or wet the land is; topography; ground cover and many more. Therefore, flooding is considered a complex natural phenomenon. There are a number of classifications for floods depending on their magnitude, intensity and duration. Floods can be classified as being minor, medium or major. Minor floods occur in low-lying areas next to water sources resulting inundation, which may require the removal of stock and equipment. Minor roads may be closed and low-level bridges submerged.

The third type of flooding is major flooding where extensive rural and/or urban areas are flooded. Property and towns are usually isolated, major road networks are closed. This may necessitate evacuation of people from the flood-affected areas. Several factors contribute to flooding; key elements are rainfall intensity and duration. Intensity is the rate of rainfall, and duration is how long the rain lasts. Topography, soil conditions and ground cover also play an important role (Moreland, 1993).

Floods are usually local, short-lived events that can happen suddenly, sometimes with little or no warning. They are usually caused by intense storms that produce more runoff than an area can store or a stream can carry within its normal channel. Rivers can also flood when dams fail, when ice jams or landslides temporarily block a channel, or when snow melts rapidly.

In a broader sense, normally dry lands can be flooded by high lake levels, by high tides, or by waves driven ashore by strong winds. On larger streams, floods usually last from several hours to a few days. A series of storms might keep a river above flood stage (the water level at which a river overflows its banks) for several weeks (Moreland, 1993).

The European Floods Directive (EFD) defines a flood as a temporary covering by water of land normally not covered by water. This includes floods from rivers, mountain torrents, Mediterranean ephemeral watercourses, and floods from the sea in coastal areas, and may exclude floods from sewerage systems (EXCIMAP, 2007)**.** The European Floods Directive further distinguishes floods according to type, of which only two apply to this study.

Table 1: Types of Floods (Modified from EXCIMAP, 2007).

Type of Flooding	Causes	Effects of flooding	Relevant parameters
River in flood plain	Intensive rainfall	Flowing water outside river channel	▪ Extent (according to probability) ▪ Water depth ▪ Propagation of flood
Flash Flooding	Cloud burst	Water and sediments outside the channel on alluvial fans River channel erosion	▪ Extent (according to probability) ▪ Water depth ▪ Propagation of flood

2.4 SADC regional outlook of 2011 floods

In February 2011, heavy rains continued in central Mozambique, Zimbabwe, Madagascar, western Botswana and northern Namibia. This included Southern Madagascar, which usually experiences droughts, and northwestern Angola (OCHA, 2011). Rainfall was said to be below average across parts of southern and northern Mozambique, Tanzania and parts of southern Angola.

By mid-February 2011, heavy rains were still being expected over northern Mozambique and parts of Angola. Most of early February 2011, heavy rains were being expected along the coast of Madagascar, northern Mozambique, Malawi, southern Tanzania, eastern Zambia and southwestern Angola. River levels swelled increasing the risk of flooding throughout the region (OCHA, 2011).

In Botswana, water levels in the Okavango River continued to rise. River levels at Mohembo on the northern border were about 34cm higher than at the same time in 2010, and continued rising. Heavy rains in areas of southeastern and eastern Botswana caused localised flooding, affecting more than 63 households. In Tutume-Malelejwe and Tshwaane, 541 households were evacuated to Dukwi and other surrounding areas (OCHA, 2011)..

In Angola, more than 400 families had been displaced following heavy rains in Luakano, on the border with the Democratic Republic of Congo, and in Ganda in western Angola. The Cunene River continued to rise though it was not expected to cause flooding downstream due to dam controls. However, the Ruacana dam floodgates on the Angolan-Namibian border were opened to control Cunene river levels (OCHA, 2011).

In Zimbabwe, the Save River water levels increased from 2.1% to 91.5% since 17 January 2011. Water levels in this southeastern river continued to rise, although the rate of increase had been slow. Populations living in the flood-prone Middle Save were put on high alert, as the danger of flooding remained imminent. In the north, the Sanyati River continued to swell, with above average flows for this time of month. Rising water levels in the Musengezi River increased the likelihood of flooding in Muzarabani (OCHA, 2011).

However, the river levels had been far below the emergency threshold levels. In central Zimbabwe, the Gweru River burst its banks, threatening residents in Senga. The risk of flash flooding was high. Five cholera cases were reported with three confirmed cases. The district of Gokwe North, in northwestern Zimbabwe, was cut off after bridges were swept away. Authorities had to airlift communication equipment to safe locations to facilitate communication (OCHA, 2011).

Zambia experienced continued rainfall throughout much of the country, but with little immediate adverse effects. Some of Lusaka's urban areas had been flooded, but mostly in areas that were not populated. The cholera situation was under control, with only a few cases having been reported. Flows in the Zambezi River continued to rise, including upstream at the Katima Mulilo station (in Namibia's Zambezi region). The Kariba Dam was at 68.7% capacity, significantly above normal for this time of the year (OCHA, 2011).

In Mozambique due to continuous moderate to heavy rainfall, the Maputo, Limpopo, Incomati, Save, Pungoe, Zambezi and Buzi river basins remained above alert levels. Floods in Gaza province affected 6,155 families, or 30,732 people. The above mentioned indicates that, the 2011 had impacts on some of the countries on the on the continent too (OCHA, 2011).

Some 18,430 hectares of agriculture land was affected in Maputo, Gaza and Inhambane provinces. Early February, the Cahora Bassa Dam had been expected to increase from 4,200 to 6,400m^3/s, creating a potentially critical rise in water levels. From 26-31 January 2011, 547 cases were reported, with 2 deaths, putting the case fatality rate at around 0.4%. Provinces affected included Manica (Chimoio, Guro and Sussungenda districts), Nampula (Monampo and Nacora districts) and Cado Delgado (Pemba city, Ancaube, Montuez, Chiure and Metude districts). Cabo Delgado was the most affected. (UN, Namibia, Floods, Situation Report 1 – 30 March 2011**).**

In Namibia, a flood wave peak of approximately 8.75 metres was forecast to arrive at Noordoewer near the border with South Africa, communities were alerted. Literature revealed that flooding-related deaths that involved storms and lightning killed about 91

people. Literature further indicates that a total of 13,043 houses had been damaged and 321 suffered injury. Findings revealed that public infrastructure, including roads, bridges, schools, clinics and churches were damaged.

In Lesotho, heavy rains claimed lives of 30 people and 4,000 livestock. More than 30 houses collapsed in the affected villages, and almost 50% of the roads had been destroyed, rendering health centres and schools inaccessible. At least 500 cases of diarrhoea were reported. More than 60% of the fields planted with mainly maize, beans, sorghum and potatoes and 40% of garden crops were destroyed by hailstorms and heavy rains. The National Red Cross Society assisted those who were affected with temporary shelter, a total 101 out of 429 schools in Lesotho's school feeding programme could not be reached and thousands of students were affected. Literature indicated that, health centres became inaccessible leaving 1,123 patients (pregnant mothers and children under two years) without their food rations (OCHA, 2011).

The country office had to work on alternative measures to reach these beneficiaries. The National Red Cross Society assisted those affected with temporary shelter. Their operations were hampered by the heavy rains. A total of 101 out of 429 schools in its school feeding programme could not be reached, affecting 13,920 students. Four health centres in Thaba Tseka were inaccessible leaving 1,123 patients without their food rations. The country office had to work on alternative measures to reach beneficiaries (OCHA, 2011).

In Malawi, since the start of the 2010 season, various districts reported incidents of storm damage to houses and crops, a total of 4,299 households, in 22 districts, reported damages to their houses due to the strong winds associated with the storms. All affected households had to be assisted by the Department for Disaster Management (DDM). Findings from the

literature state that more than 600 hectares of cropland were affected by the storms. However, the country did not register cases of flooding (OCHA, 2011).

2.5 Namibian flood situation

Floods occur in the Kunene River basin following heavy rains in the catchment, and serious flooding occurs when these coincide with heavy rainfall on the plateau in the Upper Kunene. A record wet season flow rate exceeding 1,750m^3/s was recorded at Ruacana in March 2011, as against peak flows usually in the range of 350 to 450 m^3 per second. Floods usually occur in the wet period of the year, that is, from December to June, with rainfall peaks generally occurring in February and March. In Namibia, serious flooding has occurred every year from 2007 to 2012 (OCHA, 2011).

The Middle Kunene, from Matala to Calueque, consists of rolling hills in the north and flat terrain towards the Namibian border. The river runs less steeply than in the upper reaches, dropping from 1,300m to 1,000m over its 430km length. Due to the flat terrain, a broad floodplain of up to 15km in width is evident, containing numerous lakes and lagoons. In the Middle Kunene, the river is fed by largely perennial rivers draining wide floodplains.

The Middle Kunene experiences hot summers and warm dry winters, with a mean annual precipitation of 950 mm falling over a period of about 100 days. Literature indicates that, precipitation is, however, very variable from year to year, and floods occur following heavy rains in the catchment. Habitats in the middle reaches of the Kunene Rivers change from open savannahs with shrubs, alternating with stands of dense closed forest, to savannahs associated with more arid areas and poorer soils.

Northern Namibia has two major basins influencing its hydrology; the Cuvelai (100,000 sq. km) and the Kunene (106,500 sq. km) both are transboundary between Angola and Namibia. Flood levels in the Cuvelai basin in north-central Namibia in 2011 were higher than in 2009, and set a new record for the area. The flood prone region is home to approximately one million people, which are nearly half of the Namibian population. The impacts of the 2011 floods in the region included destruction of infrastructure, for example, roads and bridges, and flooding of mahangu fields (Long, 2004).

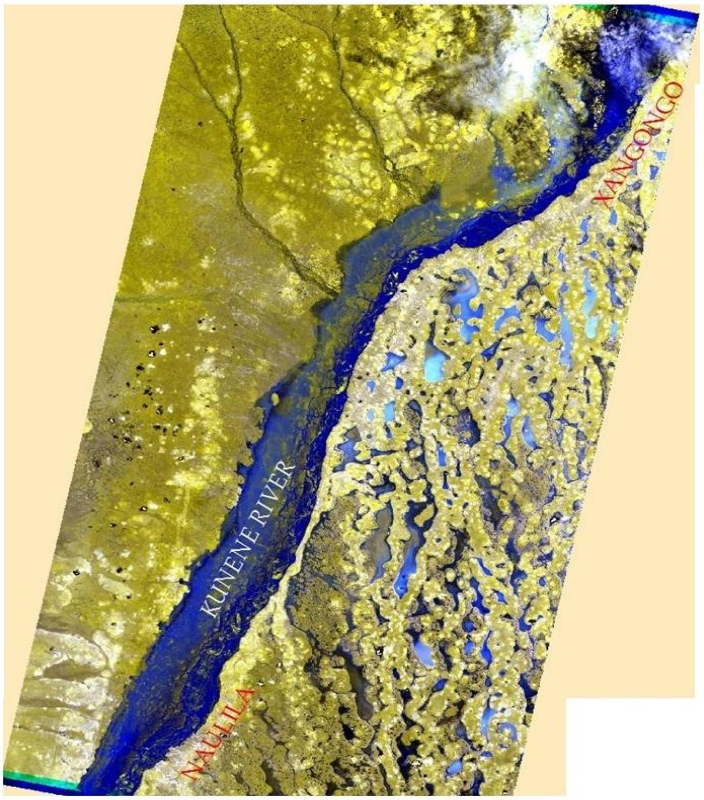

Figure 3: Satellite Imagery of Kunene River between Xangongo and Naulila (Source: NASA Earth Observatory 2011, Processesd by DRM, MWAF, 2011).

According to the European Union Delegation Press Release of 8 July 2011, the 2011 floods in northern Namibia were the worst in decades, and affected close to 300,000 people, killed at least 104 and displaced about 60,000 others with communities having to face challenges to regain their livelihood. More than 60 percent of the Namibian population live in the affected areas and depend on subsistence farming for their livelihoods.

In response to the 2011 floods, the Namibian Directorate of Disaster Risk Management (DDRM) realised that the main needs were food, shelter, transport and education. An estimated 324 schools were affected by the floods, with 163 closed, affecting over 100,000 learners. About 22 health clinics either were under water or were surrounded by water. The Namibian Government allocated N$30 million (an estimated US$4.4 million) for the response, international assistance was requested (UN, 2011).

On 29 March 2011, the President of the Republic of Namibia declared a national state of emergency to respond to large-scale flooding in the northern parts of the country. The declaration was based on the results of a rapid assessment conducted on 25 to 27 March 2011. Following weeks of heavy rain, water levels in northern Namibia were already 30-40 cm higher than they were in 2009, when a flood emergency was also declared. The most severe flooding occurred in the Oshana, Ohangwena, Omusati and Oshikoto regions. These regions form the Cuvelai Basin (UN, 2011).

However, surrounding areas were also affected, specifically Zambezi and Kavango. An estimated 62 people died. In Oshakati town in the Oshana region, an estimated 5,000 people were housed in relocation sites, and the number increased with time. The Namibia Meteorological Service predicted more rainfall over the central and northern parts of the country, which led to a further increase in water levels. Reports from the Hydrological

Services in the Ministry of Agriculture, Water and Forestry indicated that a new flood wave in the Cuvelai Basin was heading towards northern Namibia from Angola. This flood wave was expected to reach Namibia in early April 2011, and it so coincided with the predicted heavy rains.

2.6 Impact of 2011 floods in Namibia

The Directorate of Disaster Risk Management (DDRM) shared a consolidated report on the flood situation on 31 March 2011. Preliminary information indicated that the main needs were food, shelter, transport and education. An estimated 324 schools were affected by the floods, with 163 closed, affecting over 100,000 learners. About 22 health clinics either were under water or were surrounded by water.

The Namibian Government allocated N$30 million (an estimated US$4.4m) for emergence response. International assistance was also requested. USAID mobilised support for the Namibia Red Cross Society (NRCS) to replenish relief stocks. The International Federation of the Red Cross (IFRC) successfully appealed for US$328,000 (N$2.2m) from its internal Disaster Relief Emergency Fund (DREF) to support NRCS in delivering immediate assistance to 2,000 families in the northern regions of Zambezi, Kavango, Ohangwena, Omusati and Oshana, as well as in the southern region of Karas. DRM formalised a request to the United Nations to activate the International Space Charter to receive recent satellite imagery of affected areas (DDRM, 2001).

Figure 4: Flooding in northern Namibia in 2008 (GTZ, 2008).

The Namibian (08 April 2011) described the 2011 floods as being the worst so far with a total 40,952 people affected in the Oshana, Oshikoto, Omusati, Ohangwena, Zambezi and Kavango regions. Until 08 April 2011, the newspaper further reported that 9,246 people were living in relocation camps. Statistics revealed that Ohangwena had 22 relocation camps, the highest number in one region, followed by 19 in the Zambezi region and 17 in Omusati region. A total of 68 relocation camps were set up in six regions.

Forty-nine of the health facilities were cut off by floods, with the Omusati region being the worst affected. There were 22 cases of malaria reported in Oshana while 399 were reported in Omusati. Both Ohangwena and Oshana had each reported 17 cases of waterborne diseases. In these six regions, 324 schools were reported to have been

affected by the floods, and 216 had been closed temporally with about 114,075 pupils affected. Members of the Defence Force were reported to be hard at work placing bags of sand on destroyed portions for rescue purposes. The Oshana region recorded 12 damaged roads, Omusati 10, while Ohangwena had two.

The Namibian newspaper (17 May 2011) reported that the flood victims who were relocated at Oshoopala and Ekuku wanted the Oshakati town council to relocate them permanently to a safer place in Oshakati, or just even at the current Ekuku and Oshoopala relocation centres. One of the flood victims at Ekuku, Martha Andreas, was quoted by the newspaper (2011) as saying since the beginning of the floods three or four years ago, the Oshakati Town Council had told them that they would be permanently relocated to Ekuku and Oshoopala, but up to now, nothing has happened. Andreas (2011) further said they were losing many of their belongings yearly during the floods and that their children were psychologically affected. She said some of them have built houses through the Shack dwellers housing system, and they cannot pay their monthly instalments because they have no income. She said they have also to pay municipal services while they do not have an income because of the floods.

Andreas (2011) was also quoted as saying that many of them would start going back to their homes in the informal settlements, but they had no food. Andreas said the town council had told them they would no longer get food aid once they returned home, and based on that called on their constituency councillors to give them food through social grants, as is the case with those in rural constituencies.

Benjamin et al. (2012) argue that policies for responding to climate change have fiscal implications. They state that many of the complicated challenges that arise in limiting climate change (through greenhouse gas emissions mitigation), and in dealing with the effects that remain (through adaptation to climate change impacts), are of a fiscal nature.

Policies may unduly favour public spending (on technological solutions to limit emissions, and on adaptation), over policies that lead to more public revenue generation (emissions charges). The pervasive uncertainties that surround climate change make the design of proper policy responses even more complex. This applies especially to policies for mitigation of emissions, since agreement on, and international enforcement of, cooperative abatement policies are exceedingly difficult to achieve, and there is yet no common view on how to compare nearer-term costs of mitigation to longer-term benefits (Benjamin, et al. 2012).

This study is, therefore, suggesting that we learn from Kenya through its informal settlements improvement programme project as stated below.

The objective of the project is to improve the living conditions in informal settlements in selected municipalities in Kenya. Below are the Kenyan mitigation measures:

- Special consideration should be paid to these groups (people living in informal settlements) by identifying their needs from the socio-economic and baseline studies undertaken as part of the resettlement action plan (RAP);
- People in these groups should be individually consulted and given opportunities to participate in the resettlement decision-making process, as well as project activities; and

- The RAPs should be designed to ensure that special attention is paid to the monitoring of the resettlement process in order to ensure that pre-project livelihoods are indeed improved upon (Kenya Natural Disaster Profile, 2002).

Recent catastrophic floods all over the globe have raised new questions on traditional approaches in dealing with such extreme events. Many societies have accepted floods as an inevitable natural phenomenon to be endured. However, in modern times, a changing attitude has emerged as control over the physical environment has increased and technology and social organisations have made it possible for the successful manipulation of natural resources. The increasing occupation of floodplains, and competing and conflicting developmental demands have exacerbated the impacts of floods on society and the environment.

Furthermore, the concerns of human vulnerability and an environment that can be further mismanaged or abused, have focused attention to the need for more integrated, anticipatory, and far-reaching water policies and strategies (Vlachos, 1995).

Table 2 below shows the challenges of floods or rather socio-economic impacts and consequences of extreme floods.

Table 2: Socio-economic Impacts and Consequences of Extreme Floods

The Challenge of Floods	The Gamut of Flood Impacts and Consequences	Responding and Adjusting to Change
Floods and society: periodic disasters and chronic hazards	Flood perception and societal repercussions	The grand transformation: factors influencing short- and long-term responses.
Apocalyptic floods as history and climate change as the current concern.	Towards a typology of flood events and severity of effects	Strategies and tactics: policies for structural, non-structural and mixed approaches.
Extreme hydrologic events and the changing socio-ecological context: the continuous debate between structural and non-structural approaches.	The enlargement of the spatial envelope: trans boundary interdependencies and changing attitudes towards nature.	The need for integrated water resources management.
Vulnerability to floods: acts of "nature," or acts of "man?" Conflicts and floods: assigning blame.		The centrality of vigilance: implementing change
The dilemma of floodplain occupancy		

Source: Vlachos, 1995

A report on the 2011 flood situation in the Oshana region noted that 336 households had to be relocated to Oshoopala and Ekuku relocation centres. The IPCC recognises floods as climate driven phenomena and that floods have impacts that threaten environmental security. The impacts include:

- Erosion and landslides;
- Land degradation;
- Disruption to settlements;
- Disruption to transport systems; and

- Damage to infrastructure.

Namibia has a high risk of climatic and hydrological hazards. Between 1999 and 2011, the country faced six severe droughts and floods affecting over one million people. Almost the entire country is vulnerable to droughts although the southern and western parts are most affected, but also least populated. Droughts are aggravated by human activities such as vegetation and soil degradation (overgrazing and over cultivation, deforestation) and overuse of water resources (Dahlberg and Wingqvist, 2008). Current flooding events include the 2010 and 2011 rain seasons. This study is examining the impact that the 2011 floods have on basic human security.

2.7 Human security in general

The term "human security" entered the mainstream development discourse with the *Human Development Report 1994: New Dimensions of Human Security*, in which the UN reaffirmed its commitment to the twin ideals of achieving freedom from fear and want. In 2000, the UN adopted the Millennium Declaration, which explicitly stated the firm commitment of the international community to use every means to help people rise above extreme poverty. The Declaration listed specific goals, referred to as Millennium Development Goals (MDGs), with the target date of 2015 to achieve. They include: (a) eradicating extreme poverty and hunger; (b) achieving universal primary education; (c) promoting gender equality and empower women; (d) reducing child mortality; (e) improving maternal health; (f) combating HIV/AIDS, malaria, and other diseases; ensure environmental sustainability; and develop a global partnership for development. In order to achieve human security, however, the need to build upon the foundation of the MDGs was recognised by making an even more concerted effort to address the diverse range of threats endangering people.

Thus, the Commission on Human Security (CHS) was formed to further integrate the human security concept into development to ensure that the widening of choices gained by development would be complemented by the freedom to exercise these choices safely and freely. The CHS's goals were to: (a) promote public understanding, engagement, and support of human security and its underlying imperatives; (b) develop the concept of human security as an operational tool for policy formulation and implementation; and (c) propose a concrete programme of action to address critical and pervasive threats to human security (UNCRD, n.d.).

The Post-cold war conflict resolution has been dominated by two interrelated concepts: human security and peace building. It is said that human security entered the debate on peace and security through scholars and practitioners as projected in the United Nations Development Report of 1994 and later through the work of The Commission on Human Security established at the 2000 United Nations Millennium Summit. This report entitled "*Human Security Now: Protecting and Empowering People"*, was intended to broaden conceptions of security to include non-traditional threats that affected states, individuals and communities such as floods and others.

The Commission on Human Security (2003) notes the following:

Today's global flows of goods, services, finance, people and images spotlight the many interlinkages in the security of all people, because we share a planet, biosphere, technological arsenal and social fabric. The security of one person, one community, and one nation rests on the decisions of many others sometimes fortuitously, sometimes precariously. Political liberalisation in recent decades has shifted alliances and begun movements towards

democracy. These processes opened opportunities for people but also new fault lines of political and economic instabilities, some involving bitter conflicts with heavy casualties and dislocations have broken out within states. Thus, people throughout the world, in developing and developed countries alike, live under varied conditions of insecurity (Commission on Human Security, 2003).

The notion of human security seems to have evolved from the worldwide growing dissatisfaction with prevailing concepts of development and security in the 1960s, 1970s, and 1980s. Economists undoubtedly led the way by scrutinising the dominant models of economic development in the 1960s.

According to Bajpai (2002), the multinational World Order Models Project (WOMP) launched an ambitious effort to envision and construct a more comprehensive study on security focusing on a stable and just world order, and part of this endeavour drew attention to the problem of individual well-being and safety. The understanding is that there is no development without security and no security without development.

Dahlberg et al., (2008), say that in Namibia, potential conflicts over scarce resources have been identified, including conflicts over land use and water resources. The mining activities, especially in protected areas, can create conflicts over land and undermine ecology and tourism; lack of information on land, on land titles, and lack of clear land administration in communal areas exacerbate illegal fencing and encroachment, which may create conflicts over land. Tourism and national parks on the one hand, could lead to more diversified income generation from natural resources, but also to higher land prices and a risk of conflict between wildlife management and other land use such as agriculture.

The question perhaps yet to be answered is, how do floods relate to human security? Linkov et al. (2007), state that the concept of human security may be extended from its traditional meaning of local, state, regional, and worldwide civil and military security of citizens to also embrace the idea that every human being should be able to benefit from sustainable socio-economic development. They present a paradigm shift as given in Figure 5 below:

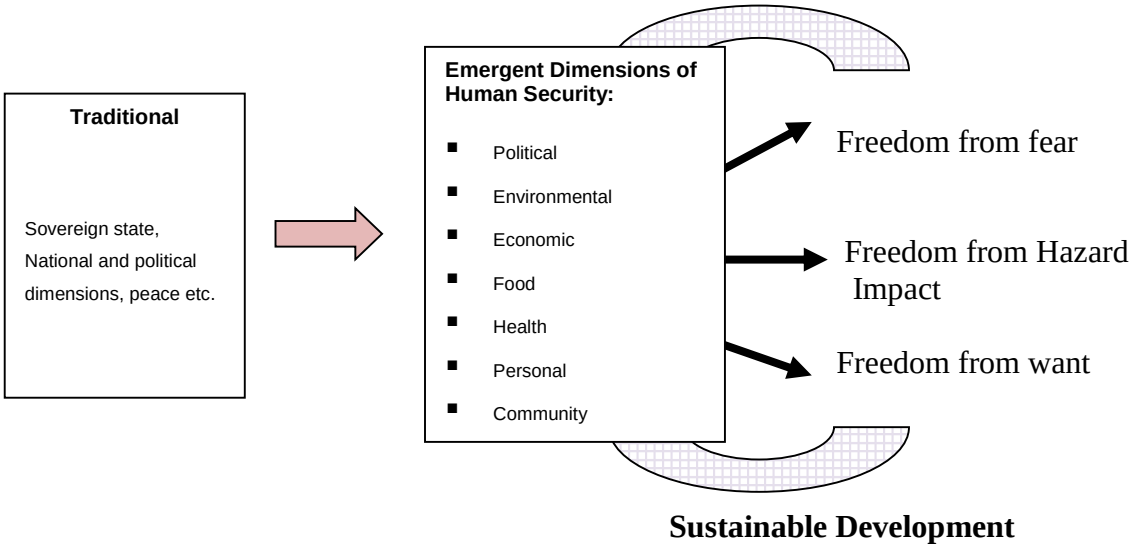

Figure 5: The Paradigm Shift on the Concept of Human Security (Renaud, 2005).

The link between floods and human security is evident in the paradigm shift as seen through community, personal, health, food, economic and environmental aspects all being parameters in sustainable development. A more direct link is the expected achievement of sustainable development in freedom from hazard impacts.

The relationship between human rights and human security is the one between the two concepts, which is on the one hand the old – human rights, emerged in 17th century – and on the other hand, the new– human security, which has not yet been developed to the degree of independent priority that has been achieved by human rights.

Human rights are specific contents, recognised and prescribed in international human rights instruments, such as: the International Bill of Rights, the International Convention on the elimination of all forms of discrimination against women, the International Convention on the elimination of racial discrimination, the Convention on the Rights of the Child, the Convention on the Protection of the Rights of all migrant workers and members of their families, and the International Convention for the Protection of all persons from forced disappearance, while the topicality of human security can be traced to the last UN General Assembly Sixtieth Session of the World Summit (2005). One of the resolutions at the Summit referred to two major components of human security needs: freedom from want and freedom from fear.

2.8 Relevant policies

In the Namibian Constitution 1990, "Human Security" is enshrined in Chapter 3, as "Fundamental Human Rights and Freedoms" in particular Article 21. Article 21 of the Namibian Constitution 1990 states that all persons shall have:

> (a) Freedom of speech and expression, which shall include freedom of the Press and other media;

(b) Freedom of thought, conscience and belief, which shall include academic freedom in institutions of higher learning;

(c) Freedom to practice any religion and to manifest such practice;

(d) Function to assemble peaceably and without arms;

(e) Freedom of association, which shall include freedom to form and join associations or unions, for example, trade unions and political parties;

(f) Withhold their labour without being exposed to criminal penalties;

(g) Move freely throughout Namibia;

(h) Reside and settle in any part of Namibia;

(i) Leave and return to Namibia; and

(j) Practice any profession, or carry on any occupation, trade or business.

The constitution does not explicitly mention issues related to freedom from fear, freedom from hazard impact and freedom from want, which seems to be the focus of the 21st century scholars as indicated in this literature, where there is a strong shift and emphasis from the traditional concept of human security.

2.8.1 Namibia's Disaster Risk Management Policy (2009)

In order to stop acting after the disaster has occurred, the Disaster Risk Management Policy was launched in 2009. The Draft Disaster Management Bill was adopted in principle in October 2010. The Draft Management Policy aims to reduce the impact of natural disasters; it also aims to increase the resilience to natural hazards and related environmental technological and biological disasters. The policy is aligned to a number of international policies, including the Kyoto Protocol.

The major objectives of the policy are to give direction and define parameters for the implementation of total disaster risk management within the existing National Disaster Risk Management System in Namibia, which falls under the Office of the Prime Minister (Africa Adaptation Project for Namibia, 2011). The major goal of the Disaster Risk Management Policy for Namibia is to contribute to the attainment of sustainable development in line with Namibia's Vision 2030 through strengthening national capacities to significantly reduce disaster risk and build community resilience to disaster.

It presupposes a number of objectives, initiatives, interventions and other measures that will be in place when the policy has attained the desired outcome. Apart from the issue that the goal of the policy indicates the desired state, it is important that the goals be defined in clear terms. Without clarity in defining the goals, it becomes difficult to state the objectives and the deliverables of the policy which in fact are things that when implemented would result in the desired state of affairs. For instance, in its goal, the Disaster Risk Management Policy is seen as only contributing to sustainable development, which implies that it is only complementary to development efforts.

In terms of seasonal floods in Namibia, one could say that there is a need to identify two competing policy positions that could attract two sets of advocates. The first alternative to deal with the floods was to look at the impacts, as it appears to be the emphasis of the Government policy, and underline solutions that only address the consequences of the floods. The second alternative policy position, for instance, could have looked at the floods so that the effects of the flooding are prevented or at least mitigated.

These two alternatives as policy alternatives do not have similar outcomes, costs and benefits. In the latter case, the policy would have found sound solutions that structurally manage the flooding by, for instance, focusing on civil engineering and construction work that need to ensure that water flows easily and does not overflow out of the natural channels to affect settled areas or where economic activities are taking place.

The former alternative appears to have accepted that floods will always be there and nothing is done about it. All that needs to be done is to ensure that once it occurs, people are rescued to safety grounds and provided with temporary amenities until the situation normalises and they go back to resume normal life.

Some of the regulatory instruments relevant to the Disaster Risk Management Policy (2009) are the National Drought Policy and strategy that provides for the efficient, equitable and sustainable approach to drought management. This policy compels communities to do things properly such as rangeland management, creation of settlements and farming practices, all which could mitigate the occurrence and impact of national disasters.

The draft National Forest and Veld Fire Management Policy (2009) is also another policy instrument relevant to disaster risk management. Another instrument is the Environment Assessment Policy, the national spill constituency plan and the national health emergency preparedness and response plan. These instruments set measures and standards that should be followed, because when such standards are not followed, it worsens the situation in incidents of disasters such as floods.

With specific reference to floods, it is not clear whether there exist specific instruments regulating settlements in flood-prone areas such as the Cuvelai Delta of northern Namibia and the Kalimbeza and Impalila areas of eastern Zambezi. Equally**,** the construction of infrastructure such as roads, bridges, clinics and schools does not appear to have been taken into consideration in the policy, standards should be in place to control the design of bridges and roads in such areas as well as the sites where specific functional facilities and amenities such as schools and hospitals may or may not be constructed. It should also be clearly planned as to where settlements such as towns, villages and municipalities can or cannot be located. These omissions are therefore possible policy instrument gaps that curtail the policy to achieve its objectives.

The policies state that economic instruments look at economic measures that can incentivise communities to act, conduct or adopt practices that mitigate disaster risk and encourage resilience when such disasters strike. These could be in the form of taxes, fees, subsidies or levies. In areas of the Zambezi region, for instance, such measures could be used to encourage people to permanently settle on dry land, as opposed to the practice of seasonally moving between the flood prone areas and the dry land which is currently the is the case of Oshoopala, Kalimbeza and Impalila areas of the country.

The thesis states that policy problem interpretation as a subset of policy analysis assists the policy process to arrive at a linkage between the policy and its goals. In this manner, it is also possible for policy analysts to determine which of the various policy alternatives that may have been generated could best achieve the desired goals, depending on the policy analysis approach, the nature of policy problem interpretation is, therefore, threefold. It could be technical where there is a need to identify the most effective and efficient policy solution in

technical and economic terms. It could also be of a political nature, when the aim is to explain the process and means that are used so that the roles of stakeholders in the policy process are determined. The underlying concern here is the role and power of certain groups, for instance, by increasing participation and consultation in attempting to identify solutions to policy problems.

Taking the example of the Disaster Risk Management Policy in Namibia, when it comes to managing floods it appears the policy process has some flaws. The process of identifying both the problem and the solutions appears to be exclusively in the interest of public institutions and excludes the beneficiaries. Government seems to be more concerned with the need to provide the technical and economic solutions without enhancing participation and consultation.

The Disaster Risk Management Unit emphasises relocation of people seasonally, to government it looks economically cheaper as what is required when floods occur is simply to resettle people on dry land, give them food and shelter for say the three critical weeks and after that they return to their homes and deal with their situations at their own cost. With participation and consultation of the affected people, the problem could be interpreted more comprehensively, thus enriching the process of identifying policy solutions.

Therefore, the purpose of this research is to raise awareness and understanding on the vulnerability that urban informal settlers are faced with due to flooding events. Literature reveals that there have been studies conducted mainly at national and regional levels. This study suggests that emphasis should be placed at community level. This would upscale the quality and content of information needed for mitigating or adapting to the impact of floods.

This would equally be a good knowledge base for decision-makers to make informed decisions as they formulate mitigation and adaptation strategies.

2.8.2 Climate change policy

Namibia is a Non-Annex1 country under the principle of common but differentiated responsibilities, this means that Namibia is not legally obliged under UNFCCC to reduce her emissions; Namibia can only do so voluntarily or when developed countries provide financial and technical resources to do so, as provided for in Article 4 of the UNFCCC. This information is given under 4.15 and 4.16 of the policy. However, as a country, Namibia has to make resources available for national programmes, such as floods, food production, energy, and water, among others.

There is consensus in the literature that climate change represents a fundamental threat to environmental security that leads to human insecurity. This is due to current development patterns that release large-scale emissions of greenhouse gases. The climate system does not have the capacity to absorb large amounts of greenhouse gases without substantial changes in the climate, which undermine global natural and economic systems. These include water supplies, food systems, health, infrastructure and settlements.

The study argue that, understanding these threats requires an understanding of the science of climate change, of the impacts of different human activities on climate change, and of the impacts of climate change on human activities and welfare. Major areas of human activity and welfare to consider include agriculture, energy generation, transport, industry, settlement, water supplies, health, food supplies, lifestyles, vulnerabilities, and responses to disasters (Purkitt, 2008).

The national policy on climate change for Namibia is written with full consideration of what is happening in Namibia and of the United Nations Framework Convention on Climate (UNFCCC), which Namibia has signed and ratified. The policy is a statement of intent and cannot be too prescriptive about the details of envisaged climate change actions. The strategy and action plan outlines clear and pragmatic ways on how this policy will be implemented. To this end, the Ministry of Environment and Tourism has already put in place a draft strategy and action plan, which is still a subject for further strategic consultations with all stakeholders. The above-mentioned gives hope that flood related incidences such as the ones faced by the Oshoopala inhabitants and others will be addressed.

2.8.3 Floods policy

There is no flood policy in Namibia at this stage; this is because the country did not view floods as being serious as drought, for instance, until now. In reference to the drought policy on page 7, there is a statement that reads, “The policy does not address other forms of disasters which can befall agriculture, be it pests, predators, theft, floods or price fluctuations. These disasters are often localised and on a smaller scale than drought, and they should be addressed as such” (Namibia Drought Policy, 2006).

2.9 Conclusion

Literature informs the reader that a lack of proper planning for natural disasters such as floods, can result in immediate impacts of flooding causing loss of human life, damage to property and loss of livelihoods. The relocation of people and removal of property from flood-affected areas such as in Oshoopala can divert the capital required for development and

maintaining production. Ineffective flood response and relief operations during major flood events can cause public discontent or loss of trust in the authorities.

The 2011 floods did not only have impacts in Namibia, but also in other Southern African Development Community (SADC) countries, such as central Mozambique, Zimbabwe, Madagascar, Botswana, Angola and Madagascar, which usually experience droughts.

The concept of human security has been broadened to accommodate issues such as natural disasters, hunger and disease because of their impact on human survival in comparison to effects of war, genocide and terrorism. Human security is concerned with safeguarding and expanding people's vital freedoms. It requires shielding people from acute threats such as floods.

There is consensus in scholarly literature that climate change represents a fundamental threat to human security. Namibia is vulnerable for two main reasons. The economy is based on natural resources, which are sensitive to climate conditions and lacks adequate financial and human capacity to deal with the effects of climate change.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter outlines how the research was conducted and the data collected. It focuses on the research design, research population, sample size used as well as the research instruments used for data collection. It also presents the procedure employed and the manner in which the data was analysed.

3.2 Research design

This study adopted a qualitative research design; in particular it employed a case study approach. The unit of analysis was the Oshoopala informal settlement in Oshakati, and the study sought to understand how human insecurity manifested itself in this locality due to flooding. De Vaus (2002), argues that a qualitative research design gives the researcher an opportunity to interact with individuals or groups whose experiences the researcher wants to understand. This researcher opted for a qualitative approach to answer the research question, which will be a meaningful contribution for policy-makers.

3.3 Population

The population of the study was 3,000 inhabitants of the Oshoopala informal settlement, as indicated by the study conducted by the University of Namibia (2011). The number of interviewees was 40, which included 30 households, the Governor of Oshana region, the Constituency Councillor and Constituency Development

Committee Members and also the Chief Regional Officer, a Development Planner, a Social Worker responsible for flood affected people; the head of the Disaster and Risk Management Unit in the Office of the Prime Minister and the Oshana Regional Police Commander.

Blanche, Durrheim and Painter (2006), say that the population selected should be those to whom the research question applies. While Bless and Higson-Smith (1995) argue that, a population is a set of elements that a research focuses upon and to which the results gathered by testing the sample should be generalised. Thus, the study was confined to the people of the Oshoopala informal settlement as a case study.

3.4 Sample size

In this study, the sample was divided into different categories as follows: 30 households that were randomly selected while the following 10 officials were purposefully selected: the (1) Governor of Oshana region, (1) Constituency Councillor, (3) Constituency Development Committee Members (1) Chief Regional Officer, (1) Development Planner, (1) Social Worker responsible with flood-affected people; (1) Head of the Disaster and Risk Management Unit in the Office of the Prime Minister and (1) Oshana Regional Police Commander.

3.5 Research instruments

This study used the qualitative research method. The researcher used the following research instruments to collect data: open-ended and semi-structured interviews,

observations and audio recorders. In addition, the researcher collected official documents such as the Disaster and Risk Management Policy and other related documents.

3.6 Data collection procedure

Primary data was obtained through face-to-face interviews, which were conducted by the researcher. The researcher interviewed the head of each household. Secondary data was obtained from relevant documents. Personal interviews were used as the data-collection method and a face-to-face setting took place between the interviewer and the interviewees. The researcher used semi-structured interviews and the responses were recorded on a tape-recorder, which was then transcribed.

3.7 Data analysis

The study used both narrative and content analyses to analyse the data that was gathered. The data obtained from the interviewees was analysed through narrative analysis, while data obtained from the documents was analysed through content analysis. The data was read and examined carefully and presented in the form of tables and charts. The data is presented in a descriptive summary of what interviewees have said. The researcher classified the similar responses to merge them into themes and categories. As McMillan and Schumacher (1993) stress, qualitative data analysis is an inductive process of organising the data into categories and identifying patterns among the categories.

3.8 Conclusion

The study used a qualitative approach to collect data. The study was done by collecting data through interviews. Data obtained from the documents was analysed through content analysis. The population under study represented 30 households of Oshoopala informal settlement, while 10 other people were purposely selected.

CHAPTER 4

DATA PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter focuses on the data presentation and analysis. The data analysis is based on structured interview questions and the research objectives of the study.

For the purpose of this research, reference is made to human security as discussed in the literature most notably by Linkov et al., (2007), who moved away from the traditional human security which centred on sovereign states, national and political dimensions and peace to new dimensions of human security which encompass food security, health security, economic security, political security and environmental security.

This chapter further presents findings of the investigation on how the 2011 floods affected the following basic human security aspects in the Oshoopala informal settlement: education, health, food security, livelihood, social life and shelter. It also discusses the vulnerability of the settlement under review to future floods.

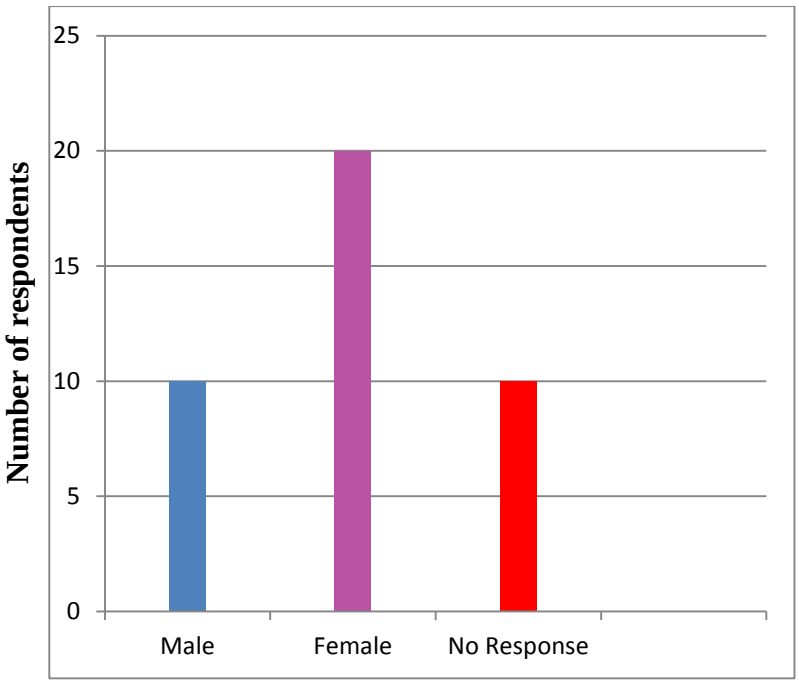

Figure 6: Demographic details

Source: (Own compilation, 2013).

Figure 6 above shows that of the 40 respondents interviewed, 20 were females and 10 were males, while 10 did not feel like responding to the questions. This shows that females represented 60% while males represented 20% response rate. From these figures, it is evident that in the Oshoopala informal settlement, females were more at home than males.

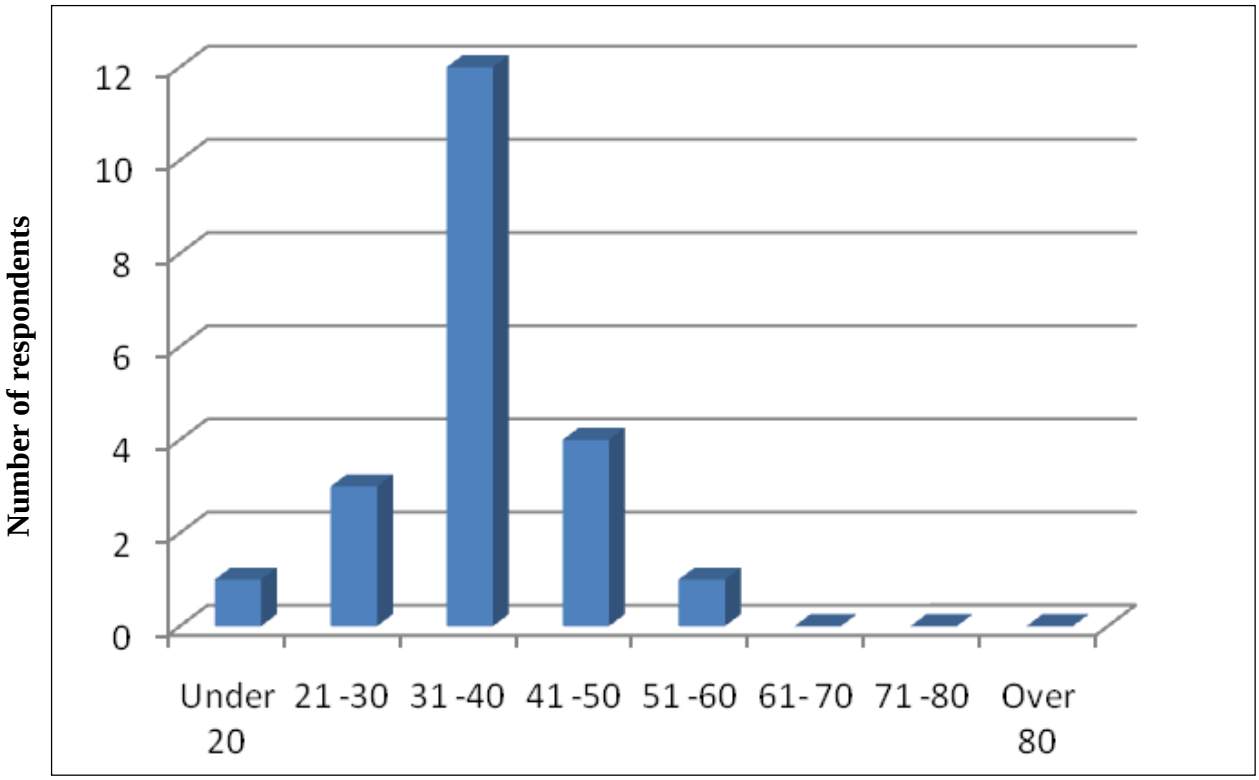

Figure 7: Age groups

Source: (Own compilation, 2013).

Figure 7 above indicates that the majority of respondents fell within the 31-40 years age group, followed by those in 41-50 years age group. This shows that the respondents are within the working age group in terms of the Namibia Labour Laws, and this therefore justifies the reasons for migration into the informal settlements.

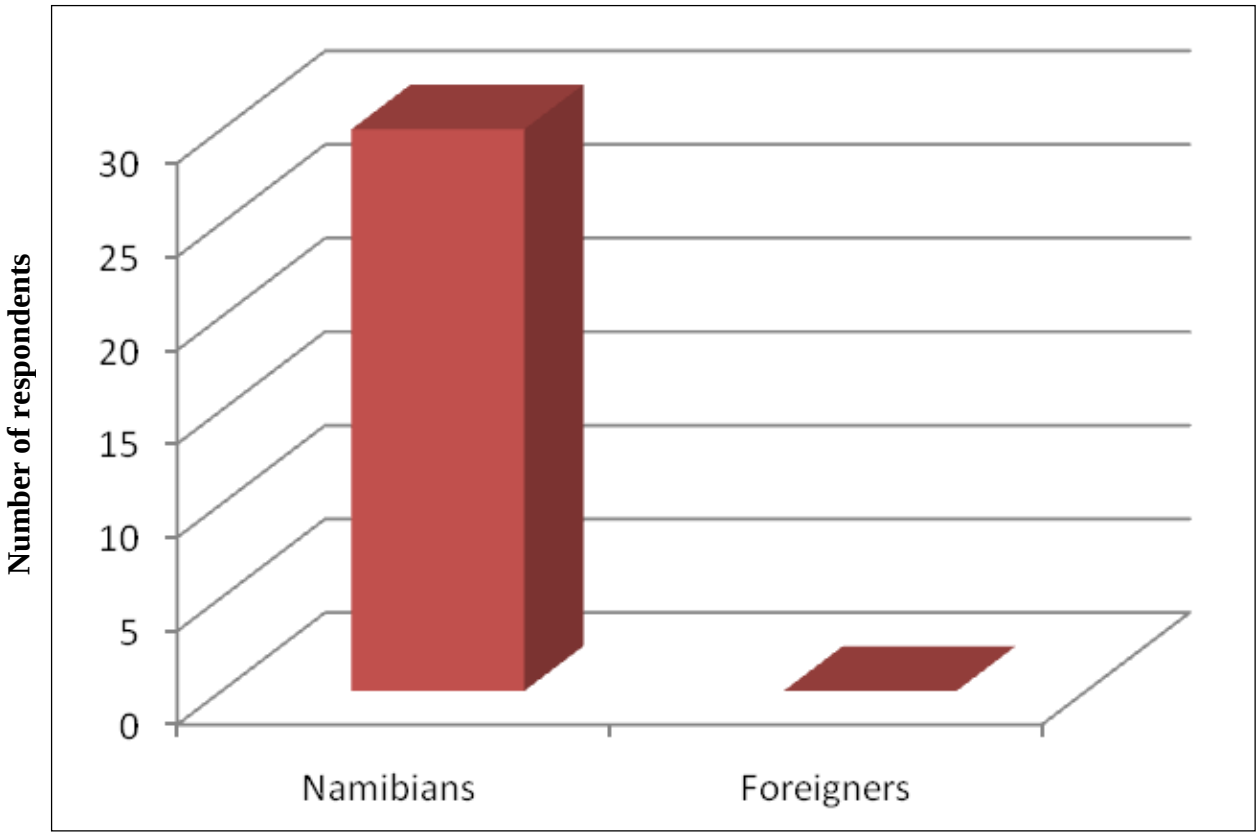

Figure 8: National status

Source: (Own compilation, 2013).

The information in Figure 8 shows that all the respondents interviewed are Namibians. This shows that the settlement is occupied mostly by Namibians.

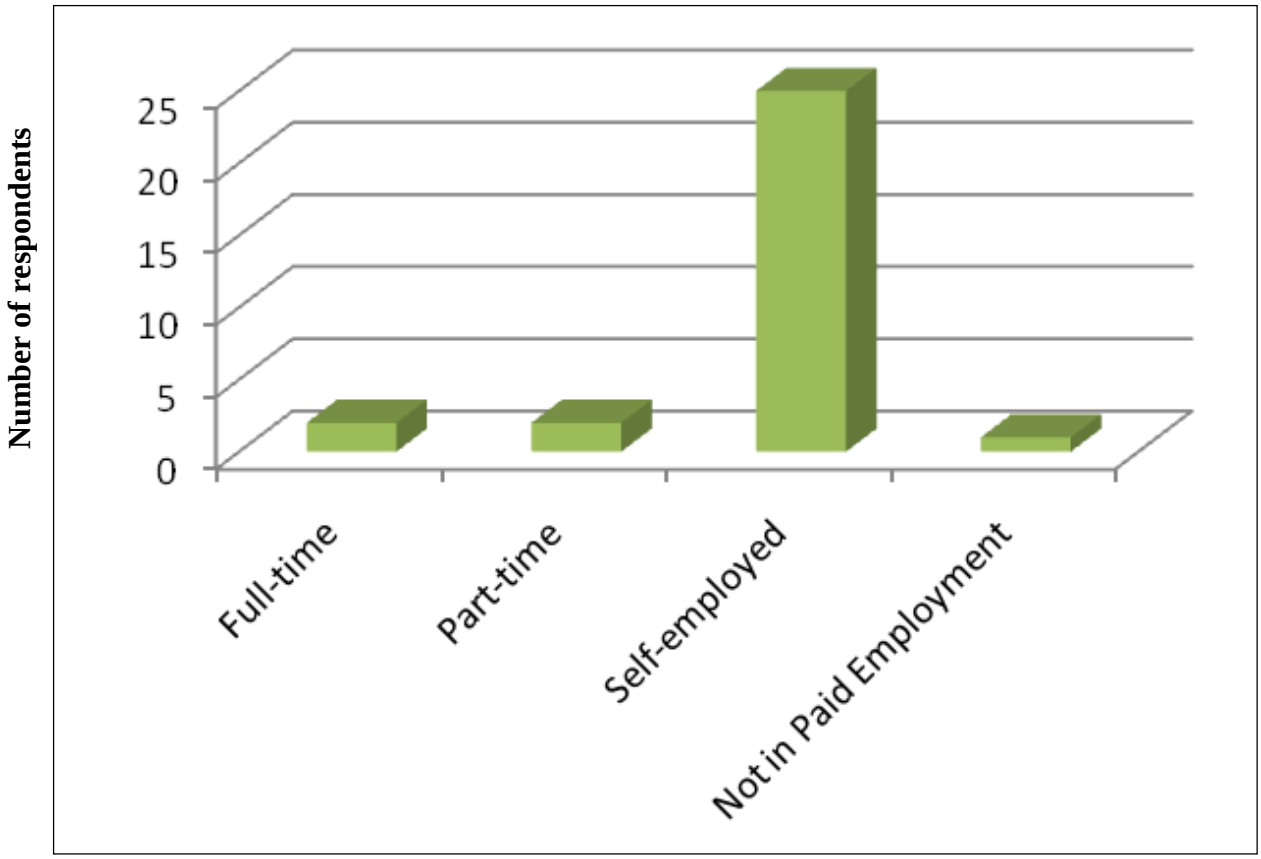

Figure 9: Employment status

Source: (Own compilation, 2013).

Findings from respondents revealed that the majority of the settlers are self-employed; some of the them sell sweets, airtime and other commodities as it appears in Figure 9 above. The selling of these commodities by the settlers is testimony of the lack of formal employment as shown in Figure 10 below. Four of the respondents interviewed are full-time employed while three are employed part-time. This can be related to the number of respondents without educational qualifications in Figure 10.

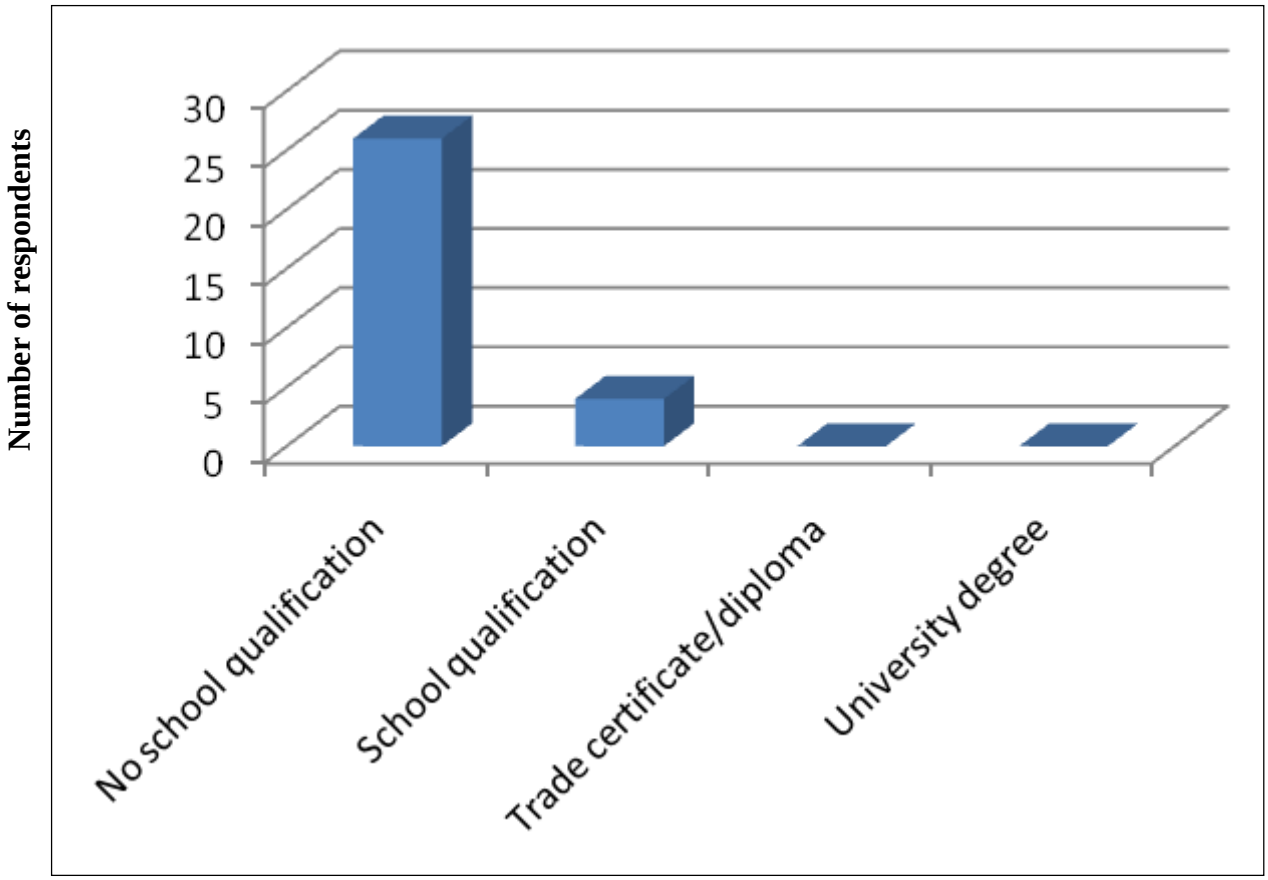

Figure 10: Education status

Source: (Own compilation 2013).

Figure 10 above shows that the majority of respondents in the sample do not have formal education. None of the respondents indicated that they had attained a trade certificate or a university degree. Only four respondents out of the total number of respondents interviewed had attained formal education qualifications.

4.2 Impact of flood on education

The youth are the future leaders of every nation and thus a nation that does not provide adequate educational facilities for its youth has no future. The respondents interviewed pointed out that the floods disrupted the education system of their children. More information is supplied in Tables 3 and 4, Figure 11 and 12.

Data collected from the field also showed that six schools in the Oshana region were closed, affecting 2,204 pupils and the normal operation of the school calendar. Consequently, 86 teachers were also placed on temporary leave (Report on National Response to Flood Disaster, 2011). This shows that most of the learners in the Oshoopala informal settlement, who attend those closed schools suffered in terms of education deprivation and exposure to effects of flooding. Table 3 below gives a picture of the numbers of learners and teachers affected by the closure of schools in the Oshana region due to flooding.

Table 3: Schools temporarily closed in the Oshana Region.

No	Name of School	Region	No. of Learners	No. of Teachers	Date Closed
1	Iivuyongo CS	Oshana	531	19	24/03/2011
2	Emono CS	Oshana	453	19	24/03/2011
3	Uukwiyoongwe	Oshana	222	11	24/03/2011
4	Eendjanti PS	Oshana	154	6	24/03/2011
5	Oshihenge CS	Oshana	282	13	24/03/2011
6	Ehenye PS	Oshana	562	18	24/03/2011

Source: (Report on National Response to Flood Disaster, 2011).

The information in the table above is depicted in the Pie Chart below in 3-d dimension.

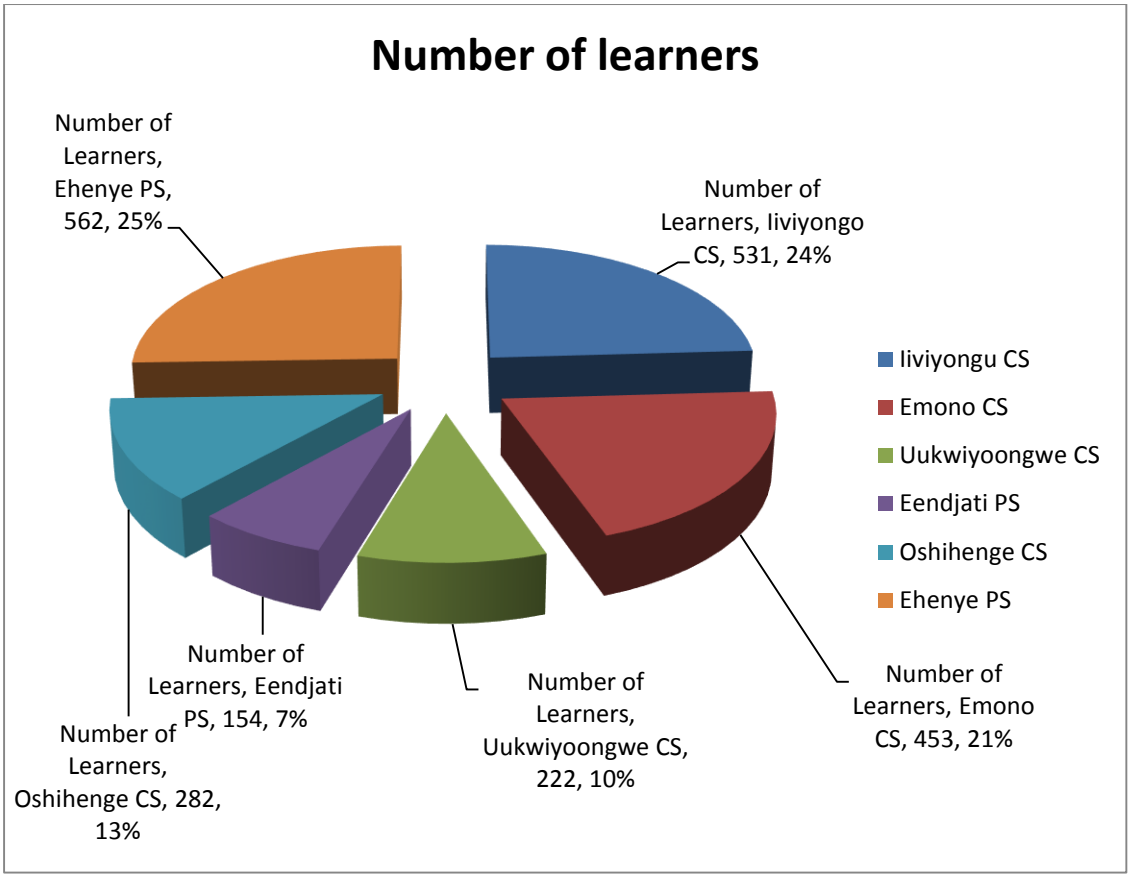

Figure 11: Number of learners affected by flooding in the Oshana region

Source: (Own compilation, derived from the Report on National Response to Flood Disaster, 2011).

Based on the findings, Figure 11 shows that many schoolchildren were directly affected by the closure of schools due to the 2011 floods in the Oshana region. The data shows that Ehenye Primary School had the highest number of students who suffered as a direct consequence of floods - standing at 562 (representing 25% of learners affected by flooding in the Oshana region). The least affected in terms of number of learners was Eendjati Primary School with 154 (7%). A total number of 2,204 learners suffered because of floods in the region under study.

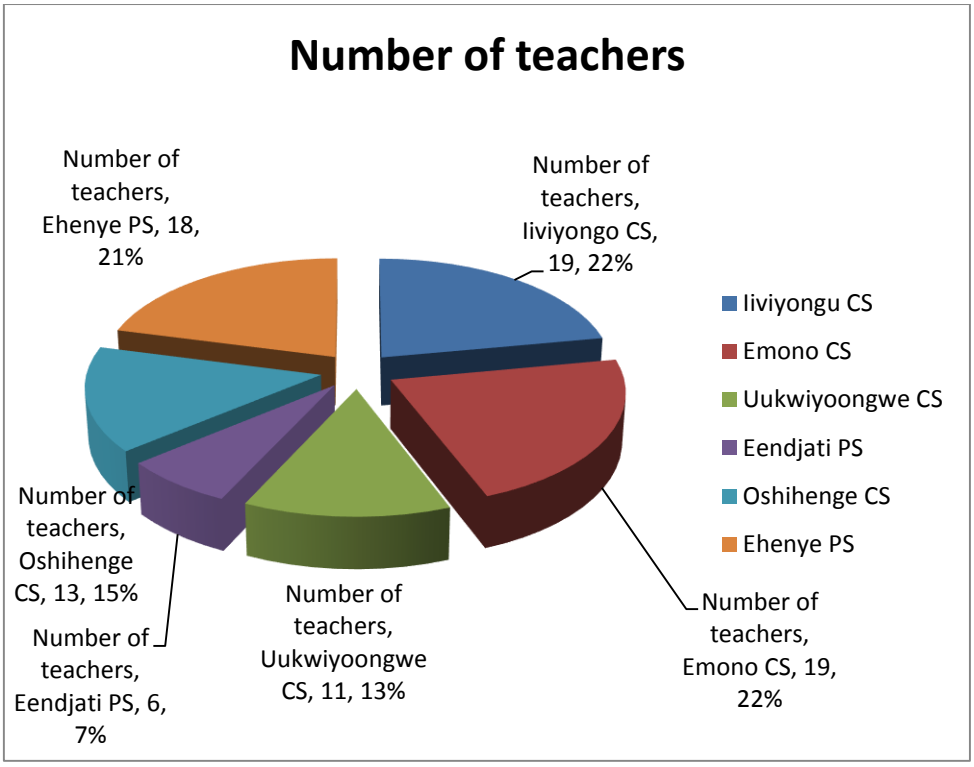

Figure 12: Number of teachers affected by flooding in the Oshana region

Source: (Own compilation, derived from the report on national response to flood disaster, 2011).

Figure 12 reflects the number of teachers who were affected by the 2011 floods in the Oshana region. The worst affected was Emono Combined School which had 22% of teachers who could not report for duty due to flooding, while Eendjati Primary School had only 7% teachers who could not report for duty because of flooding in the region. Eighty-six teachers also suffered as a result of the floods. It can be concluded from the figures shown in the pie charts that education was affected by the floods in the region. This, therefore, indicates the manifestations of human insecurity in terms of human needs such as education.

4.3 Impact of floods on health

Linkov et al. (2007) revealed the importance of health as a major new dimension of human security. The study shows that during flooding, the runoff water combines with human waste from sewers, drains and latrines spread throughout the settlement. This waste normally carries bacteria, viruses and parasites that can cause a wide range of gastro-intestinal infections, that include diarrhoea, typhoid, cholera and intestinal worm infections. However, the illnesses were limited to influenza, coughing and allergies; this was because of the effective and timely response from the Ministry of Health and Social Services other humanitarian international agencies such as the Red Cross.

The respondents revealed that the major concern was that of sanitation and the management of solid waste in the informal settlement and at the relocation centre. The respondents also pointed out that they had to resort to the sharing of toilets and bathrooms. It was expected that each person should clean up after using the private rooms and showers; to the contrary, most people did not. This caused a major health hazard at the relocation centre as people resorted to using open space for bathing and as toilets at night.

Findings revealed that no death was reported as a direct result of the effects of the illnesses caused by floods in the settlement. The respondents indicated that they received effective support from the health institutions and other agencies in the established camps in terms of drugs and other medical sundries. The findings of this study show that the 2011 floods affected the health situation moderately. Table 4 below indicates the type of illnesses, which affected respondents as flood incidents.

Table 4: Seasonal calendar of flood risk and associated illnesses

Month	Type of Illness	Incident(s)	Response
Feb-April	Influenza	42	Treated
Feb-April	Chest Pains	11	Treated
Feb-April	Diarrhoea	7	Treated
Feb-April	Rashes	32	Treated
Feb-April	Gastro-intestinal	23	Treated

Source: (Own compilation, 2013).

One respondent stated that they find it difficult to continue with their daily means of livelihood especially after experiencing these floods for more than five years. The respondent and the family are amongst those that have been relocated from one place to another. They further stated that they are psychologically affected by living a nomadic life. The respondent explained how painful it is to live in two different places for less than a year with one's belongings moving back and forth. Their kids are said to be equally emotionally affected; as a result, those who live a normal family life throughout the year call them names at schools.

The respondents lamented that flooding was one of the most distressful experiences in their lives and further thought that decision makers were ignoring their desperate situation, because every year they received empty promises from policy makers such as assisting them to relocate to high ground. The above highlighted view qualifies the manifestation of human insecurity, taking it from the perspective of freedom from fear and freedom from hazard as it is indicated on page 36.

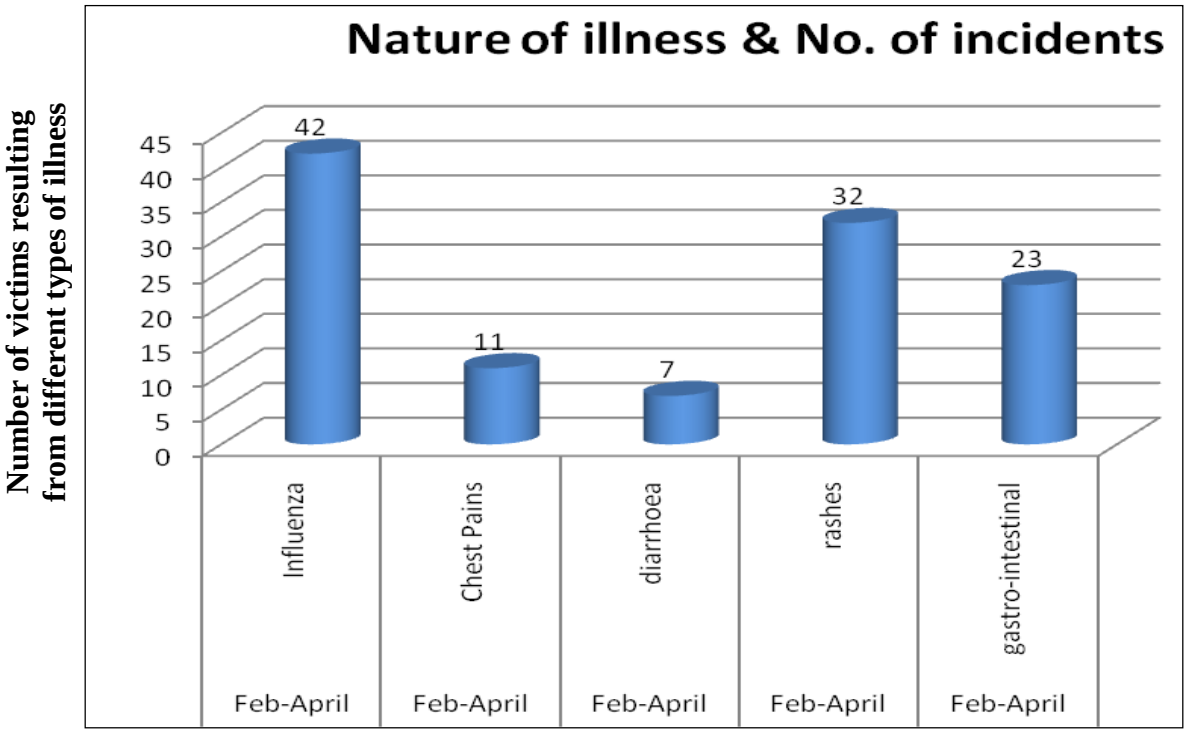

Figure 13: Nature of illness and number of incidents

Source: (Own compilation, 2013).

Figure 13 shows that the highest recorded illness was influenza, followed by rashes. The seasonal calendar with the months in which flooding occurs is also shown in Table 4 on page 55. Figure 13 further shows the illnesses, which are often associated with flooding.

4.4 Impact of floods on food

Data collected from the respondents indicate that the victims of the 2011 floods in the settlement received support from the government, friends, relatives and other local and international donor agencies. The flood victims indicated that the local business community did not support them in 2011, speculating that since floods have become an annual disaster, they are also equally affected. This is in contrast with the data presented by the officials in terms of the business community. The respondents indicated that they received support in the

form of high nutrition instant foods such as morvite porridge and tinned fish, among other foodstuffs in the Oshana region.

Respondents believed that though government support came, many of the victims felt the support came too late and did not measure up to their losses. They also registered concern on being given a tin of fish without maize meal. On the contrary, the purposefully selected officials were satisfied with the food donations they received from the government and external support.

One of the uncomfortable conditions presented by the respondents was the wet weather during the floods. People did not have proper cooking facilities; they used wet wood to cook outside where it was raining most of the time. In most cases, they failed to cook anything in these conditions. As a result, they went without food when it was wet. To others, food stocks were lost in the floods and they were left to starve.

The support for relocated victims ends at the relocation centre and this remains a cause for concern to many victims without enough resources. The respondents were generally dissatisfied with the food relief donated. They also cited lack of control as to who was a victim of floods and who was not; because some people who were not directly affected by the floods were in the habit of camping with those affected just to have access to relief provisions.

4.5 Impact of flood on the livelihood in Oshoopala

Data collected from the field is indicative of the extent of the impact of flooding in the informal settlement in the context of human security. The analysis of the data shows that apart from stressing social networks and inflicting damage to property, the floods caused significant damage to the livelihood of the victims.

When asked the extent to which flooding impacted the settlers in terms of livelihood systems, 14 households agreed that education suffered most followed by health, damage to property and informal trading. This position was also supported by the official respondents, who echoed the same sentiments. The same feelings were expressed by one respondent who said, “Education suffered most, then health systems, economic and social activities”.

A total of 17 respondents of the sample interviewed pointed out that they depend on selling roasted beef locally known as “kapana”, vegetables, airtime, sweets and other sundries as well as engaging in back yard gardening. Shebeens, which are a major source of income, were also negatively affected in terms of their daily income. In this context, shebeen and small stall owners who refused to be relocated lost out on income because of the loss of customers because of relocations.

The same number of respondents pointed out that the devastating floods washed away their backyard vegetable gardens and that the land remained flooded for a long time thereafter. The results of such an impact are that the settlers were unemployed for periods up to five months after which they had to start all over again.

The Oshakati town economy is not so diversified, thus entrenching the regime of poverty under which the Oshoopala informal settlers live. Most of the respondents interviewed indicated that they lost substantial property, which ranged from furniture, kitchen utensils to personal documents and other items during the flooding.

4.6 Flood trends in Oshoopala

Findings revealed that data collected from the field and published reports show that the severity of floods in the Oshoopala informal settlement area has been moderate during the last few years, but were particularly severe in 2011. Table 5 below shows the incidents and their severity, which translate into extensive damage to property. It also shows that the loss of livelihoods of the people has increased significantly. The overall picture depicted here is that the Oshoopala informal settlement area has become more vulnerable to floods in recent years.

Table 5: Oshoopala informal settlement flood trend analysis

Year	Flood Incidents	Severity
2011	Destruction of property, loss of livelihood, poor health conditions and health related conditions, lack of food, economic loss, impact on health facilities, destruction of roads and infrastructure	High
2010	Destruction of property, poor health conditions, destruction of roads and infrastructure, loss of livelihood.	Moderate
2009	Destruction of property, poor health conditions, destruction of roads and infrastructure, loss of livelihood.	Moderate
2008	Destruction of property, poor health conditions, destruction of roads and infrastructure, loss of livelihood.	Moderate

Source: (Own compilation, 2013).

This study found that flood incidents increased meaningfully from the previous floods in the same area in terms of the number of property damaged. The destruction of property caused by

floods had a major impact on human security. The floods caused constraints on the settlers' resources, thereby rendering them to become financially insecure.

It is important to note that the Oshoopala informal settlement is characterised by a high population density within a small geographic area and that the residents are subjected to the risk of all environmental emergencies. The reason for such exposure is the basic infrastructure, which is either old or inadequate.

4.7 Impact of floods on shelter

This research found that most of the dwellings in most parts of the settlement, especially shacks, also known as "kambashus;" cannot withstand severe flooding. Information from 13 respondents of the sample indicated that the flooding of their dwellings was caused mainly by an inadequate drainage system. It became evident from data collected that the Oshoopala informal settlement is at risk of flooding because of the poor drainage system. Most of the "kambashus" were flooded by water because of the nature of their poor structures. The study also found that the 'kambashus' have a very poor foundation; as people construct them starting at ground level. The researcher also noted that leaking roofs contributed to the flooding of the "kambashus."

Figure 14: Impact of floods on shelter and livelihood, (some parts of the Oshoopala informal settlement) and it also shows different structures under floodwater.

4.8 Impact of floods on social life

Nineteen respondents also revealed that they had to resort to sharing of toilets and bathrooms with children without regard to gender and age. This situation is normally against traditional norms. On the social context, the children developed the "Peeping Tom" syndrome; they watched unsuspecting elders while they were bathing or sleeping. On the other hand, children were restricted to very small playing fields while the social networks of the flood victims were disrupted. Some respondents also pointed that they were deprived of privacy and this led to frustrations amongst couples. This was so because one tent accommodated more than two families. The respondents also mentioned that they were restricted to their camps because of rampant theft of their personal belongings. The views of the researcher are that these were a violation of the freedom of movement provided for in the Constitution of Namibia.

Figure 15: Confinement of children and adults

The figure above shows the confinement of children and adults to one social place, which is that one big tree. The other picture shows the council truck busy relocating people.

4.9 Vulnerability of Oshoopala informal settlement to floods

The physical space of the informal settlement is closely linked to social networks as well as economic activity and this contributes to the chaotic layout of the settlement. The informality is seen through the temporally structures of dwellings and the low level of service provision that exists. This study observed that the majority of inhabitants at the settlement are unemployed or have very low household incomes. Poverty remains one of the worst factors of vulnerability - a human insecurity that was aggravated by the 2011 floods, the study has revealed.

The Oshoopala informal settlement area receives relatively heavy rainfall every year during the wet months. For instance, during 2012, when the northern regions experienced no

flooding from neighbouring countries, as was the case in the past, the settlers of Oshoopala were still housed at the relocation centre because of the natural rainfall flood. In that context, the researcher noted that flood risk management is not a priority at household and community levels. It simply means that the settlement is in a riverbed and thus requires serious attention from the management of the local authority.

Data collected from the field indicate that most settlers have tried to improve on protecting their dwellings by either raising them or reinforcing the foundations while also improving their drainage systems. The study found that most settlers are concerned with being relocated back and forth, to and from higher ground.

Most settlers are looking forward to be relocated permanently on higher ground. However, His Worship, Mr. Onesmus Shilunga, the Mayor of Oshakati Town, informed the researcher that in their Master Plan, the Oshakati Town Council intends to relocate the settlers, but because of budget constraints, the Council can only relocate a limited number of settlers. Table 6 below provides a summary of the effects of the 2011 floods in the Oshoopala informal settlement.

Table 6: Effects of flood risk in Oshoopala informal settlement

General Source	Hazard	Factors	Effects
Poor drainage	Stagnant water	• Poor drainage • Shallow, hand dug informal drains between houses	• Health concern (children play unhygienic water) • Food limitations
Poor drainage	Surface runoff	• Hardened surfaces such as roads	• Health concerns (waste deposited into dwellings and related costs)

			• Damage to structures • Damage and loss of assets as well as documents
General Source	**Hazard**	**Factors**	**Effects**
Structural problems	Landscape	• Structures in close proximity to wetlands and water bodies • Poor building material • Home foundations below ground level	• Damage to property • Illnesses • Missed school and work
Flood exposure	Stagnant water	As above	• Homes destroyed • Damage to property • Downturn of business • Community isolation • Starvation and hunger

Source: Survey data (Own compilation, 2013)

4.10 Conclusion

A sample of 30 randomly selected households and the 10 purposefully selected were involved in the study, 10 respondents refused to participate. Female participants constituted 60% while 20% were male and 20% did not respond. The age category ranged from 31 to 60 years. The result of the study, indicate that education was the hardest affected by the floods. As a result, schools were closed due to the 2011 floods. Food was in short supply; the incessant rain made it impossible for people to prepare and have proper meals.

Most people in this settlement are self-employed and make a living through selling “kapana” and operating shebeens. These business ventures came to a standstill because of the floods thereby heavily affecting the inhabitants’ livelihoods. The data presented also show that the Oshoopala informal settlement was negatively affected by the 2011 floods. This is evident from the increase in the number of incidents and the high rate of severity noted in that locality. The settlement’s vulnerability to floods is said to be because, it is situated in an “oshana” (pan). The research further found that the types of materials used in the construction of the “kambashus” (shacks) and the other structures contributed to the flooding. Data analysed showed that the floods affected human security in Oshoopala informal settlement in all forms of livelihood.

In the final analysis, the research indicates that the flood risks impacted on human security since people affected went with limited important basic needs of life such as food, education, shelter and good health. The research showed that there was no loss of human life as a direct result of floods during the 2011 in Oshoopala informal settlement.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the conclusions and recommendations, which could be useful for future planning and management of floods in the Oshoopala informal settlement.

5.2 Conclusions

Results from this research show that it is not feasible to eliminate flood risks in the Oshoopala informal settlement. What this means is that as long as floods continue to persist, the inhabitants of Oshoopala will remain exposed to a variety of risks which impact directly on their human security. This research has shown that floods can be managed to acceptable levels through planning, design, construction, operation and maintenance of facilities and the involvement of all stakeholders.

Throughout this research, it is noted that the best way of handling flooding would be to move the inhabitants out of their present locations and to upgrade or elevate of the land, as it appears to have been the promise of the local authority to the settlers. However, the local authority stressed financial constraints to carry out such a project.

This research noted the importance of the need to move away from structural measures and focus on other non-structural approaches. As much as we consider the physical control and engineering construction approaches, it is equally necessary to consider reducing human vulnerability through some adaptive approaches. The choice of building infrastructure in oshanas was found to be the major cause of flooding in Oshoopala informal settlement area.

The research showed that the drainage infrastructure does not exist in most cases, and where it exists, it is ill maintained.

The study also concludes that the major factor leading to flooding in Oshoopala informal settlement is a result of the people settling in the low-lying areas of Oshoopala where water collects. The findings also show that leaking roofs also contribute to the damage of property such as furniture and other household items.

This study indicates that schoolchildren were also affected by the flooding since they missed school for two months. The research also concludes that the socio-economic life of Oshoopala residents was disrupted by the floods. The research concludes that there were no lives lost during the floods, although many people suffered from flood-related illnesses.

This study further identified the need for integrated, anticipatory, and far-reaching water policies and strategies, as suggested by Vlachos (1995). By efficient water management, Namibia would, therefore, be able to avert the misery caused by recurrent floods, especially in the informal settlements in the northern parts of the country.

In conclusion, the research shows that there was shortage of food within the settlement, although they received donations in relocation centres. Findings further revealed that health was said to be satisfactorily managed even though there were frustrations from the victims mainly due to the unfulfilled promises made by policy makers.

5.3 Recommendations

Based on the findings of the study, the following are recommended:

5.3.1. There is a need to carry out a thorough assessment of the habitability of Oshoopala informal settlement. This will enable the authorities to see whether the area is suitable for human settlement.

5.3.2. There is also a need to increase involvement and collaboration with the settlers in understanding flood risks. This should be done through adaptive measures and capacity development programmes.

5.3.3. In the context of the findings, the informal settlers should consider taking adaptive management initiatives, which reduce the risks of flooding through contributory measures. As dwellers of the settlement, they can carry out maintenance work that can improve building structures with the limited resources available other than wait for the government to do the work. In this regard, settlers are encouraged to move away from the dependency syndrome where they believe that it is the responsibility of the local authority and the government to solve their problems.

5.3.4. To consolidate the adaptive measures carried out by the settlers, the responsible authorities through the government should also move away from the reactive approach and try and be proactive in handling flooding in Oshoopala informal settlement and other affected areas in the country. The authorities should raise awareness among the dwellers about the dangers associated with flooding and improve storm-water management.

5.3.5. The Government should build earth dams to harvest the rainwater and the fish that come with the floods. The water from the dams could be used for irrigation and livestock.\

5.3.6. In terms of health, as a direct result of the flood, the study found out that there is a level of frustration, which may lead to psychological effects on some of the victims.

The study, therefore, recommends that all victims of floods since 2008 be considered for a befitting treatment in this regard.

5.3.7. The local authorities should come up with measures, which slow migration into the informal settlements. No significant achievements will be noticeable if migration into the settlement is not monitored.

5.3.8. It is important to acknowledge the Oshakati Concept Master Plan, as an elaborative proactive approach in mitigating flooding risks in the area. The plan entails the upgrading of all the affected areas. However, such a plan should include the technical assessment of all flood occurrences, education on better house building techniques, migration control into high-risk areas and relocation option through appropriate land acquisition.

5.3.9. The Oshakati authorities should work on improving the monitoring and early warning system through execution of the communication and awareness programme. The bottom line will be to educate the settlers on what action to take in order to lessen the effects of flooding. Such an approach should include community capacity building programmes, media briefings, information collation and reporting.

5.3.10. A common capacity-building programme should involve brochure tips, workshops, flood risk education, films showing flooding incidents and evacuation procedures, and many others. There should be cooperation centred on the Weather Bureau of Namibia, which should be charged with the responsibility of broadcasting weather warnings as well as reports of regular flood incidents rather than the Ministry of Agriculture.

5.3.11. There should be a paradigm shift in the ways of reporting and issuing of weather-related disasters such as flooding. This means that there should be convergence of ministries into one, especially at the top to minimize on bureaucracy. The best possible suggestion is to integrate the Ministry of Works and Transport, the

Hydrology Department and the Disaster and Risk Management into one unit responsible for flood-related disasters. The study recommends that public call centres should be established during flooding times to ensure coordination.

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APPENDICES

(a) APPENDIX A:

2011 flood impact questionnaire of the Oshoopala informal settlement in Oshakati, Oshana region

This survey is undertaken for academic (research) reasons. My name is Sarafina Tshilunga, a student of the University of Namibia (UNAM). I am doing a Master's Degree in Security and Strategic Studies, within the Faculty of Economics and Management Sciences, Department of Politics and Administrative Studies.

The reason for my focus on this area is prompted by the recurrent floods in the northern part of Namibia. Being a student of Security and Strategic Studies, I am keen to find out the human security issues that were impacted upon by the floods of 2011, hoping that my findings will help improve the situation. The information you are providing will be kept confidential.

Thank you very much for your participation.

SarafinaTshilunga

UNAM Student

(b) APPENDIX B:

APPENDIX A: PREDETERMINED QUESTIONS FOR THE LOCAL RESIDENTS OF OSHOOPALA INFORMAL SETTLEMENT

Name (Not Compulsory):

.....

Age: .....

Gender: (Tick where appropriate) **Female** ☐ **Male** ☐

Nationality, are you a Namibian?

…….....

Date: .....

1. Are you aware of floods that have been occurring in the Oshoopala informal settlement, Oshakati? **(Tick where appropriate)**

   Yes ☐ No ☐ Not sure ☐

2. Would you say that Oshoopala is one of the informal settlements that have been vulnerable to seasonal flooding? **(Tick where appropriate)**

   Yes ☐ No ☐ Not sure ☐

3. What do you think are the reasons for flooding or the causes of flooding in the Oshoopala?

   .....

   .....

   .....

4. How did the 2011 floods impact on the basic human security dimensions of the inhabitants of Oshoopala informal settlement?

   .....

   .....

   .....

5. Were there any lives lost, and if so, how?

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6. Was there enough food for the affected people?

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7. Did the learners have access to education?

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8. Was there any damage to property?

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9. What were the indications of loss of livelihood, if any?

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.....

.....

10. Was access to health facilities possible?

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.....

.....

11. What are the flood impacts that you as a resident of the Oshoopala informal settlement experienced?

Floods impacts	**Tick or cross here as appropriate**
Death and physical injuries	
Destruction of structures (business, buildings, etc)	
Destruction to roads and other infrastructures	
Cut off to health facilities, schools, business etc	
Economic loss (direct or indirect loss of income)	
Hazard conditions and diseases (Cholera, Malaria and other water borne diseases etc)	
Others	

If others, please specify

……

……

12. Are you employed?

……

……

……

13. What level of education do you have?

……

……

……

14. Can you briefly explain the conditions around the private rooms such as bathrooms at the Relocation Centre?

……

……

……

15. Would you say the Oshoopala informal settlement is situated in a floodplain or prone area to flood and low-lying areas e.g. Oshana (not necessary the Oshana Region)?
(Tick where appropriate)

Yes ☐ No ☐ Not sure ☐

16. Does the Oshakati Town Council have a legislation or policy or regulation or bylaw that regulates where people should settle?
(Tick where appropriate)

Yes ☐ No ☐ Not sure ☐

17. What assistance were you given?

……

……

18. Do you think you could cope with/ without external assistance such Government and foreign assistance?

……

……

19. Based on your experience and the above answers, what do you think should be done to help people from being vulnerable to future floods in this area?

……

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