

ASSESSING THE EVIDENCE:

MIGRATION, ENVIRONMENT
AND CLIMATE CHANGE IN

NAMIBIA



International Organization for Migration (IOM)
The UN Migration Agency



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The Migration, Environment and Climate Change: Evidence for Policy in Southern Africa and the Indian Ocean, is a project implemented by the International Organization for Migration (IOM). The project aims to contribute to the global knowledge base on the relationship between migration and environmental change, including climate change. The innovative research aims to formulate policy options on how migration can benefit adaptation strategies to environmental and climate change.

The national assessment on Migration, Environment and Climate Change (MECC) aims at assessing the relationship between migration, environment and climate change, mapping of the country's vulnerability to natural hazards and presenting an overview of the current policy and legal framework.

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Cover Photo: © Haimetu, 2018, Namibia

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ACKNOWLEDGEMENTS

The author is grateful to the Ministry of Environment and Tourism (MET) and the Technical Working Group (TWG) on Migration, Environment and Climate Change (MECC), which comprised of representatives from the Office of the Prime Minister (OPM), Ministry of Home Affairs and Immigration (MHAI), Ministry of Agriculture, Water and Forestry (MAWF), Ministry of Health and Social Services (MOHSS), Ministry of Gender Equality and Child Welfare (MGECWF), Ministry of Land Reform (MLR), National Planning Commission (NPC), Namibia Statistics Agency (NSA), University of Namibia (UNAM), Namibia Red-Cross Society (NRCS), United Nations Food and Agriculture Organization (FAO) and the United Nations Development Programme (UNDP). The Technical Working Group (TWG) guided and provided valuable input to the report.

The author would also like to extend gratitude to the staff members of both IOM Namibia and Switzerland offices for their continuous support and guidance throughout the preparation of the MECC report for Namibia.

GLOSSARY / DEFINITIONS

Migration	The movement of a person or a group of persons, either across an international border, or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition on and causes; it includes migration of refugees, displaced persons, economic migrants and persons moving for other purposes, including family reunification
Environmental Migrants	Persons or groups of persons who, predominantly for reasons of sudden or progressive change in the environment that adversely affects their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad
Nomad	An individual, or a member of a group, who does not have a fixed place or residence and migrates from place to place, searching for water, food or grazing land
Pastoralism	A livelihood strategy based on moving livestock to seasonal pastures primarily in order to convert grasses, forbs, tree-leaves or crop residues into human food. The search for feed is however not the only reason for mobility; people and livestock may move to avoid various natural and/or social hazards, to avoid competition with others or to seek more favorable conditions. Pastoralism can also be thought of as a strategy that is shaped by both social and ecological factors concerning uncertainty and variability of precipitation, and low and unpredictable productivity of terrestrial ecosystems
Labour Migration	Movement of persons from one country to another, or within their own country of residence, for the purpose of employment
Internal Migration	Movement of people from one area of a country to another area of the same country for the purpose or with the effect of establishing a new residence. This type of migration may be temporary or permanent. Internal migrants move but remain within their country of origin.
International Migration	Any person who changes his or her country of usual residence (Long-term or Short-term) Long-term migrant: A person who moves to a country other than that of his or her usual residence for a period of at least a year (12 months), so that the country of destination effectively becomes his or her new country of usual residence Short-term migrant: A person who moves to a country other than that of his or her usual residence for a period of at least 3 months but less than a year (12 months) except in cases where the movement to that country is for purposes of recreation, holiday, visits to friends and relatives, business, medical treatment or religious pilgrimage
Displacement	A forced removal of a person from his/her home or country, due to armed conflict or natural hazards.

Internally Displaced People (IDP)	Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border ?
Disaster Risk Reduction (DRR)	The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events
Disaster Risk Management (DRM)	The systematic process of using administrative directives, organization and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster
Drought	The naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems
Floods	The overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas not normally submerged. Floods include river (alluvial) floods, flash floods, urban floods, pluvial floods, sewer floods, coastal floods and glacial lake outburst floods
Disaster	A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts
Hazard	A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation
Vulnerability	The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards
Resilience	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management
Capacity	The combination of all the strengths, attributes and resources available within an organization, community or society to manage and reduce disaster risks and strengthen resilience

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ACRONYMS AND ABBREVIATIONS

CCA	Climate Change Adaptation
DREF	Disaster Risk Emergency Fund
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
GDP	Gross Domestic Product
DRFN	Desert Research Foundation of Namibia
HHIES	Household Income and Expenditure Survey
HSN	Hydrological Services of Namibia
IDS	Inter-censal Demographic Survey
IDMC	Internal Displacement Monitoring Centre
IDP	Internally Displaced Person
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IRLUP	Integrated Regional Land Use Plan
MECC	Migration, Environment and Climate Change
MET	Ministry of Environment and Tourism
MHAI	Ministry of Home Affairs and Immigration
MLR	Ministry of Lands and Resettlement
NBSAP	National Biodiversity Strategy and Action Plan
NDC	National Disaster Centre
NGO	Non-governmental Organization
NCRST	National Commission on Research Science and Technology
NRCS	Namibia Red Cross Society
NSA	Namibia Statistics Agency
OPM	Office of the Prime Minister
SNC	Second National Communication
TWG	Technical Working Group
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees

WHO	World Health Organization
WMR	World Migration Report
WRI	World Risk Index

EXECUTIVE SUMMARY

Every year, millions of people around the world are displaced by disasters and conflicts (IDMC, 2017). A disaster refers to a serious disruption of the functioning of a community or society, up to a point where the affected communities are forced to migrate (UNISDR, 2017). Disasters are caused by natural hazards such as floods, droughts, cyclones and earthquakes, the impact of which, may be worsened by underlying factors such as poverty and inequality, fragile or weak governance, urbanization, climate change and environmental degradation (IOM, 2015b). Whereas, social unrest and armed conflicts are the main drivers of conflict-induced displacements (IDMC, 2017), disasters bring about the highest number of displacements each year with a total of 24.2 million people recorded for 2016 as compared to conflict-related displacements that lead to the displacement of 6.9 million people during the same period (ibid). The combined displacements totaled 31.1 million people in 2016 alone and it equates to one person forced to flee every second (IDMC, 2017).

Namibia is classified as one of the countries that is most vulnerable to climate change and natural hazards in the world (UNU-EHS, 2016). The country experiences significant agricultural production losses, upon which more than 70% of the population directly depend on food security for survival (NSA, 2012). The effects of climate change and natural hazards pose serious threats to the livelihood of communities and socio-economic development at large (Birkmann & Welle, 2015). Namibia is particularly vulnerable to natural hazards, such as droughts and floods (OPM, 2012b). Droughts and floods occur at different temporal and spatial scales and have become recurring events (UNDP, 2014). Due to increased frequency and intensity of these extreme weather events, the affected communities are forced to migrate from one area to another, mostly to escape drought stricken or flooded areas (in the short-term) or in search for water, grazing, arable land, in-order to enhance their livelihood and survival (ibid).

In order to better understand MECC in Namibia the assessment objectives were as follows:

1. To map and build evidence on the complex relationship between migration, environment and climate change in Namibia, by looking at human mobility due to environmental factors, and providing an overview of the country's situation.
2. To analyze existing policy frameworks and provide recommendations for the integration of migration due to climatic and environmental variability into the national policy framework.

The MECC assessment adopted a qualitative research methodology and is primarily based on a desk-review. The desk review has been complimented by interviews of the relevant institutions and case studies on prominent natural hazards such as floods in the north central and drought in the north-west regions of Namibia respectively. The assessment focused on capturing and analyzing existing data from literature with specific emphasis on human mobility due to environmental phenomenon and the responsiveness of the existing policy framework relevant to climate change and human mobility.

Findings

Namibia is highly vulnerable to natural hazards or disasters, such as floods and droughts. Whereas, the risk of social unrest and conflict seem to be minimal. The livelihood of rural communities (which makes about 70% of the total population) is heavily dependent on subsistence agriculture (livestock and crop production) (NSA, 2012). Namibia is the driest country in sub-Saharan Africa, and faces significant water shortages in most parts of the country. Rainfall is very low and highly variable. It is interesting that some areas are subjected to extremely low rainfall (west, south and central regions), while others (north-central and north-east regions) are subjected to short duration and high intensity rainfall, which results in floods and subsequently, the displacement of people.

Loss of Livelihood¹

The cumulative impacts of below average and variable rainfall leads to prolonged droughts, which in turn results in lack of water, loss of grazing, loss of livestock, crop failure and ultimately, loss of livelihoods. These natural hazards are further aggravated by the impacts of climate change,

1 The means of survival (e.g. crops and/ or livestock)

thereby forcing the affected communities to migrate to other areas in search for water, grazing land, arable land or employment opportunities in urban areas for survival. The re-occurrence of droughts and floods affects the communities' resilience and ability to recover from these livelihood-damaging events (MET, 2011b). In Namibia, loss of livelihood is the major factor that forces human mobility and contributes to the increasing rural-urban migration in the country (NSA, 2015).

Displacement due to Floods

Floods are seasonal and occur during the rainy season (around November – April) (Kapolo, 2017). Floods mostly occur in the north-central and north-eastern regions, which are the regions that receive the highest rainfall in the country (NRCS, 2017). Floods are caused by a combination of local rainfall and inundation from Angola and Zambia, and leads to the displacement of communities in the affected regions (OPM, 2012). On average, the floods lasts for about three months (depending on the magnitude of each specific flooding event) and under normal circumstances, the affected communities do return to their homes after the floods have subsided (ibid). However, with decreasing resilience and declining livelihoods, some of the affected communities migrate or relocate from the affected areas on long term, leading to increased internal migration (Mendelson, et al., 2010).

Displacement due to Wildfires

Forest or wildfires are natural occurrences or phenomena. However, in recent times most fires are man-made and wild fires occur more frequently than the natural fire occurrence cycles. Wildfires occur mostly during the dry season when the vegetation biomass is dry (DRFN & KULIMA, 2017). Wildfires destroy about five to seven million hectares in Namibia annually, destroying valuable grazing, valuable timber, thatching grass and forest products thereby causing air pollution and sometimes loss of human lives (Schlechter, 2011). As a result, uncontrolled forest or wildfires have the potential to destroy forest goods and services that are vital for the livelihood of communities, circumstances that may temporarily force the affected communities to migrate to other areas in search for grazing land and other means of survival.

Forced Migration due to Drought

Drought leads to poor livestock conditions, which leads to poor market prices, and poor market prices leads to poor household income. As a consequence of the 2013 drought, a total of 25,023 people, comprising of about 4,171 households experienced food insecurity (OPM, 2013b). The households experienced a food security deficit of more than 39 percent of the annual food needs, which is calculated at 2,100 kilocalories per person per day (OPM, 2013a). In addition to the impacts the prolonged dry spells, lack of portable water forces communities to collect water from unprotected water sources, thereby increasing their risk exposure to waterborne diseases (ibid). In 2015, a number of cholera incidents were reported in the Kunene region (OPM, 2015).

Existing Policy Frameworks

Migration Policy

The Migration Profile for Namibia was developed in 2015 to aid the development of comprehensive national migration policies with emphasis on complex migration dynamics. Although some information on migration exists, the data is scattered across a wide range of ministries, departments and agencies and therefore not readily available to guide policy development. The 2015 Migration Profile forms the basis for the development of migration policies to enhance data collection on human mobility, both internal (within the country) and external (cross border).

Labour Migration Policy

In May 2017, Namibia validated the National Labour Migration Policy. The policy aims at strengthening rules and regulations for effective administration of labour migration and optimizes the benefits of labour migration on development, in accordance with the Southern Africa Development Community (SADC) Regional Labour Migration Policy Framework and the SADC Labour Migration Action Plan.

Environment and Climate Change Policies

As a global response to the threat of climate change, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992. Namibia ratified the Convention in 1995 and subsequently agreed to establish national programmes to mitigate climate change

and to integrate climate change into the national development plans. The UNFCCC recognizes the vulnerability of developing countries such as Namibia to climate change, and calls for efforts to assist developing countries.

National Policy on Climate Change, 2011

The impacts of climate change on natural resources and ecosystem services affect the livelihood of communities (particularly rural communities), who have limited capacity to adapt, and often carry the highest degree of vulnerability to the impacts of climate change and hence the need to integrate disaster-induced displacement into existing policy frameworks. The policy outlines strategies and measures to mitigate associated impacts, reduce vulnerability and improve the country's adaptive capacity. However, the climate change policy is not explicit on environmental migration and the associated impacts thereof.

Disaster Risk Management Act, 2012

The National Disaster Risk Management Act (Act No. 10 of 2012) makes provisions for the establishment of institutions for disaster risk management; integration and coordinated disaster management approaches that focus on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, effective response to disasters and post-disaster recovery; the declarations of national, regional and local disasters; to provide for the establishment of the National Disaster Management Risk Fund and incidental matters.

Namibia's Disaster Risk Management Policy Framework is response-orientated. This implies that the policy is more inclined to response mechanisms after the event and has limited guidelines on what should be done to mitigate impacts before the occurrence of events.

At national level, the overall coordination and flood response mechanisms rests with the National Disaster Risk Management Committee (NDRMC), under the Office of the Prime Minister (OPM, 2011). However, despite the good response and coordination during the flooding events, there seems to be no long-term strategy to mitigate the impacts of floods in the future.

National Disaster Risk Management Policy

The National Disaster Risk Management (NDRM) policy of Namibia gives direction and defines the parameters for disaster risk management within the established National Disaster Risk Management System. The Policy goal is to contribute to the strengthening of national capacities in order to significantly reduce disaster risk and build community resilience to withstand and cope with disasters or natural hazards.

To achieve the objectives, the policy has four broad strategies, namely: the integration of disaster risk reduction into sustainable development policies and planning at all levels; the strengthening of disaster risk management structures, mechanisms and capacities to build resilience to hazards at national, regional, constituency and community levels; the incorporation of risk reduction mechanisms towards emergency preparedness, response and recovery programs and the building of multi-stakeholder partnerships at all level to contribute to the implementation of total disaster risk management.

Integrated Regional Land Use Plans

The Ministry of Lands and Resettlement (MLR) developed regional land use plans but these plans exclude strategies to deal with land allocation to people displaced by environmental factors such as droughts and floods. In addition to the regional land use plans, through the traditional authorities and communal land boards, the Ministry of Lands administers the allocation of customary land rights (rights for communal settlement, cultivation and grazing) yet again, the land allocation framework does not make provisions on how the people or communities displaced by environmental hazards will be assisted.

Key Recommendations

Data Collection and Management

- There is a need for national consolidation, integration and coordination of information relevant to migration, environment and climate change (example, for consideration and coordination by MET or NSA).
- Capture, integrate and interpret MECC data in order to prove,

or dis-prove, the interlink-ages between migration, environment and climate change, which can be attributed to a form of environmental migration.

- Improve data collection for international migration (cross border) and capture additional information at immigration entry points such as the reason for migration, with emphasis on environmental migration aspects, as necessary.
- Improve data collection on internal migration by capturing the movement of people within the country and highlight the displacement and mobility factors, in order to ascertain the extent to which the movement of Internally Displaced People (IDP) is influenced by environmental factors.
- Collect data and document the impacts of wildfires on the forests, grazing, livestock, and communities' livelihoods, including human mobility, both during and after the wildfire.
- Capture environmental factors by adding relevant MECC variables to regular national appraisals such as the Household Expenditure Survey (HHES), Inter-censal Demographic Survey (IDS), National Census, National Agricultural Census, etc.
- Capture MECC data during national disasters for all natural hazards leading to the displacement of people (regardless of the magnitude), even if such events are not declared as national disasters, in order to develop trends on the impacts of climate change on human mobility.

Research

- Research and data capturing cover the full cycle of the event, before, during and post displacement, in order to present the full picture (tell a full story, e.g. what happened before, during and after the event).
- Develop specific research programs to address the MECC research gaps, by adding appropriate variables to existing national research

programs or developing new and dedicated MECC research programs, for consideration by the National Commission on Research Science and Technology (NCRST), the Namibia Statistics Agency (NSA) and the Ministry of Environment and Tourism (MET).

- In addition, there is a need to highlight the relevance and importance of research needs with universities such the University of Namibia (UNAM), Namibia University of Science and Technology (NUST) and the International University of Management (IUM).

Migration as an Adaptation Strategy

- Adopt migration as an adaptation strategy to mitigate the impacts of a particular event (e.g. floods, drought or fire). This implies that migration can be planned and through early warning systems (e.g. for a looming drought or flood), the susceptible community can migrate to safer areas, before the disaster occurs.
- History indicates that the strategy to move from one area to another as an adaptation has been used over generations. The movement is either to avoid an adverse situation at the location of origin or in search for better livelihood and survival, which is mostly adopted for short-term, but also applicable for long-term.

Building Community Resilience

- A lack of the communities' ability to cope with the adverse effects of environmental events, leads to forced migration and disrupts socio-economic activities such as food security (flooded crop fields and food storage facilities, or loss of livestock due to drought), education (closed schools), health (no health facilities in the relocation areas), and so forth. As a result, there is a need to build community resilience, and develop capacities to mitigate and withstand such impacts, so as to prevent forced migration.
- Conduct a vulnerability mapping of communities that are most at risk of particularly recurrent events (e.g. flooding in a particular locality) and build resilience against such events.

- Identify and advocate the implement of interventions that capacitate communities and increase their resilience in response to environmental shocks.
- Mainstream Climate Change Adaptation (CCA), into all strategies at national and regional levels.

Displacement

- In the event of displacement, ensure that there are functional national and regional structures to deal with both short and long-term displacements.
- Continue with the shelter provisions for displaced communities. However, such shelter localities present new challenges and there is a need to improve: (a) the provision for shelter (multiple families sharing one tent), (b) the quality and the extremely high toilet use ration (e.g. 50 people per toilet), (c) the quality and high bathroom use ratio and (d) other social aspects such as unplanned pregnancies.
- There are provisions to assist people displaced internally (within the country), however, there is often no provision made for cross border displacement (from other countries), and there is a need to explore possibilities at both national and SADC level.

Policy Framework

- Consolidate information relating to migration, environment and climate change. This should be made available to provide guidance during discussions on disaster risk management policies, climate change adaptation and human mobility policy tools.
- Policy mainstreaming and integration of MECC aspects into the existing legal and policy frameworks, to enhance data cohesion and aid the development of evidence based policy instruments pertinent to environmental migration.

- Review and harmonize relevant national policy frameworks such as, the Climate Change Policy, Disaster Risk Management Act, Disaster Risk Reduction Policy as well as national planning documents such as the current National Development Plan (NDP5), National Biodiversity Strategy and Action Plan (NBSAP), and the Regional Land Use Plans (RLUP), to mention but a few.
- Policy should be geared towards developing pro-active measures before disasters occur as opposed to re-active and disaster response-oriented approaches (action after the event).
- Monitor and improve the implementation of existing laws and policies, such as the provisions in the Disaster Risk Management Act, relevant to disaster risk reduction and allocation of resources for the establishments of institutional structures that has not been implemented to date.

INTRODUCTION



I. INTRODUCTION

Every year, millions of people around the world are displaced by disasters and conflicts (IDMC, 2017). In 2016 alone, a total of 31.1 million people were displaced, of which 24.2 million were displaced by disasters and 6.9 million were displaced owing to conflict (IDMC, 2017). A disaster or natural hazard refers to a serious disruption of the functioning of a community or society, up to a point where the affected is forced to migrate (UNISDR, 2017). For the Namibian context, disasters refer to natural hazards such as floods, droughts, wildfires and sea-level rise, whereas conflict refers to social unrest and armed conflict.

Namibia is the driest country in sub-Saharan Africa and inhabits two of the oldest deserts in the world, namely; the Namib and Kalahari deserts (Mendelson, et al., 2010). As a result, about 92 per cent of the country is classified as hyper to semi-arid, and only about 8% is classified as dry to sub-humid (DRFN & KULIMA, 2017). Compounded by extreme dry conditions and erratic rainfall patterns, the country is exposed to recurrent droughts and floods (DRFN, 2008). As a result, Namibia is classified as one of the countries that are most vulnerable to natural hazards and experiences significant agricultural production losses due to climate change (Birkmann & Welle, 2015). The effects of climate change and disasters pose serious threats to the livelihood of communities and socio-economic development in the country (Kamal, 2016). Loss of livelihood forces communities to migrate in search for arable land, grazing, water and better livelihoods.

According to the Inter-governmental Panel on Climate Change (IPCC), the period from 1983 to 2012 was likely the warmest 30 year period of the last 1,400 years (IPCC, 2014). The report further states that from 1880 to 2012, the average global temperature increase was estimated at 0.85oC (ibid). In the Namibian context, reports indicate that change in temperature leads to change in climate and climate change affects the magnitude and frequency of weather events (such as rainfall); and rainfall has a negative bearing on agricultural productivity, food security, health,

water and ultimately, the livelihood of communities (DRFN & KULIMA, 2017). Poor people have less capacity to adapt and are therefore the most vulnerable to impacts of climate change (ibid).

1.1. Problem statement

The link between migration, environment and climate change in Namibia has been under-researched, and hence the importance of the national assessment.

As reported in the Migration in Namibia: A Country Profile 2015, information on migration exists, but it is scattered across a wide range of ministries, departments and agencies so it is therefore not readily available and difficult to access (IOM, 2015a). In addition to scattered information, there seem to be very little data available to support the link between migration, environment and climate change in Namibia. If consolidated, the information would provide guidance and meaningful contribution to policies on disaster risk management and climate change adaptation.

1.2. Objectives

The national assessment on Migration, Environment and Climate Change (MECC) aims at assessing the relationship between migration, environment and climate change, mapping of the country's vulnerability to natural hazards and presenting an overview of the current policy and legal framework relevant to the subject matter.

1.3. Methodology

The MECC assessment was primarily a desktop review and aimed at taking stock of existing information relevant to the subject matter to understand the link or correlation between migration, environment and climate change. The assessment further looked at the country's vulnerability to natural hazards and the attributing factors to human mobility. The scope of the study also entailed an analysis of the current policy framework, disaster risk response mechanisms and identification of information gaps.

The desktop review was complemented by field assessments for the two case studies on the flooding events in the north-central regions

(Omusati, Oshana, Ohangwena and Oshikoto) and drought in the Kunene region. The field assessment identified and interviewed the relevant regional stakeholders such as the Regional Council², the Regional Disaster Risk Management Committee (RDRMC) members³, the Namibia Red-Cross Society (NRCS)⁴ and stakeholders at constituency level⁵ (local community), such as Constituency Councilors, the Traditional Authority, village headmen, churches⁶ and the affected community members.

In addition to the field assessments, interviews were conducted with the members of the national Technical Working Group (TWG) on migration, environment and climate change, which comprises of representatives from government institutions, state-owned enterprises and non-governmental organizations (NGOs). During the assessment, a total of three draft MECC reports were presented to the Technical Working Group for comments, input and guidance. The interviews were mostly designed for the verification of information obtained from literature.

I.4. Background and context

Namibia is situated between 22°S and 17°E (17 and 22 degrees) south of the Equator and covers an area of about 824,268 km² (Mendelson, et al., 2010). Namibia borders South Africa to the South, Botswana to the east, Zambia to the north-east, Angola to the north and the Atlantic Ocean to the west (Mendelson, et al., 2010).

Namibia is a very arid country and the driest country in sub-Saharan Africa (IPCC, 2007). Rainfall is very low, erratic and unevenly distributed across the country, and that has negative effects on the rain-fed agriculture and grazing on which the people depend on, for survival (ibid). Overall, environmental phenomena and climate change induce impacts such as floods, droughts, wildfires and sea-level rise and pose substantial challenges to the livelihood of the people, particularly rural communities and informal settlements in urban areas. In addition, high poverty levels and income inequality limit the adaptive capacity of the people (DRFN, 2008).

2 The highest government office in region (regional government)

3 The regional committee that deals with emergency events in the regions, such as floods and droughts

4 an international non-governmental humanitarian organization

5 The regions are divided into constituency, which is the lowest government institution

6 Often, churches are involved and provide humanitarian aid (e.g. sleeping shelter and food at the church)

Figure 1.1: Location of Namibia and neighboring countries

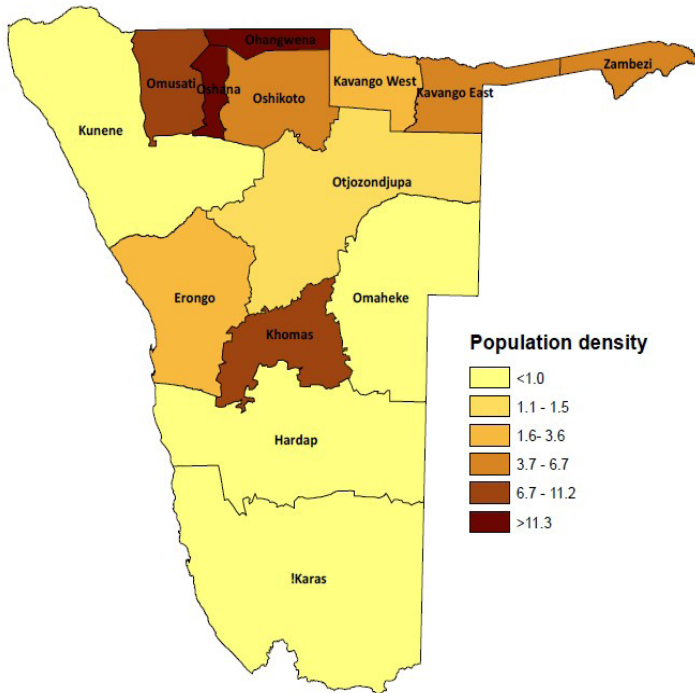


Source: Mendelson, et al. 2010.

1.4.1 Political Regions and Population Density

As presented in the map below, Namibia is sub-divided into fourteen political regions, which are equivalent to provinces or states in other countries (NSA, 2016b). Throughout the report, the assessment makes reference to the regions and hence the importance of presenting the regional set-up for Namibia.

Figure 1.2: Political regions and population density



Source: NSA, 2016b

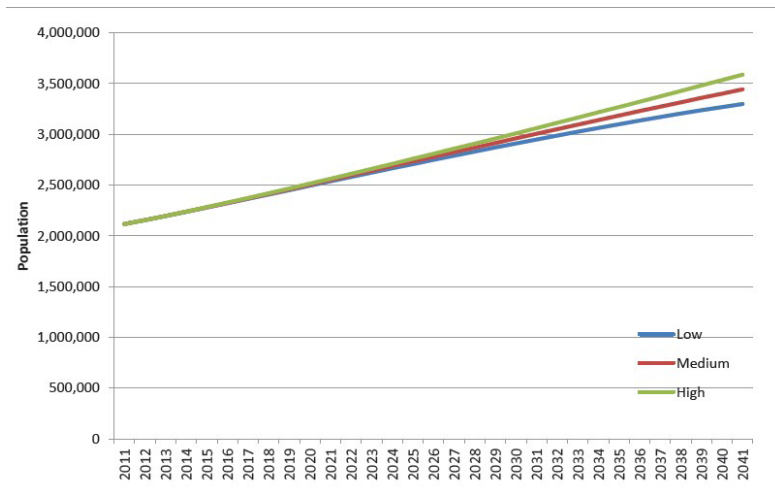
In addition to the presentation of regions, Figure 1.2 presents the population for each region (NSA, 2016b). Population density refers to the average number of people per m², which is calculated against the size of land (ibid). The population density for Namibia grew from 2.6 people per km² in 2011 to 2.8 people per km² in 2016 (ibid). At regional level, Ohangwena and Oshana were recorded as the most densely populated regions, depicting density levels of 23.9 and 21.9 people per km², followed by the Khomas region⁷, with 11.3 people per km², and at the other end, with a population density of 0.5 people per km². The Karas region is the least densely populated region in the country, followed by Hardap and Kunene as well as regions with similar densities of 0.8 people per km², respectively (NSA, 2016b).

⁷ The Khomas regions include the capital city of Windhoek.

I.4.2 Population Projections

With an estimated population of 2.3 million people in 2016, which equates to a density of 2.8 people per km², as compared to a global average of 49 people per km², Namibia is the second least densely populated in the world (NSA, 2016b). However, at an estimated annual growth rate of 1.9, Namibia's population is growing rapidly and the population is projected to be 3.59 million by 2041 (NSA, 2014).

Figure 1.3: Projection of Namibia's population by 2041



Source: (NSA, 2014)

Figure 1.3 indicates that, by 2041, Namibia's population is projected to grow from 2.3 million in 2016 to 3.2 million using the lowest variant, 3.4 million for the median variant and 3.6 million for the highest variant (NSA, 2014).

I.4.3 Community Livelihood

The livelihood of rural communities in Namibia is heavily dependent on subsistence agriculture (livestock and crop production) (MAWF, 2015). Climate change has increased the occurrence of droughts and floods, which negatively impacts on agricultural productivity and the livelihood of communities (ibid). These environmental and climate variability

occurrences force communities to migrate for survival – in search for water, grazing for their livestock and suitable land for cultivation (IDMC, 2017).

I.4.4 Basic Country Statistics

Figure 1.4 shows the estimated population living in urban and rural areas, as well as by regions, between 2011 and 2016 respectively (NSA, 2016b). The statistics indicate that the urban population increased from 42.8% in 2011 to 47.9% in 2016, whilst the rural population declined from 57.2% in 2011 to 52.1% in 2016, which reflects a high trend of rural to urban migration in the country (ibid). At regional level, the Khomas region had the largest share of the total population with 17.9%, followed by Ohangwena with 11.0% and Omusati with 10.8% respectively (ibid). Omaheke had the smallest share of the total population on 3.2% (NSA, 2016b).

Figure 1.4: Namibian Population from 2011 to 2016

Area	2011		2016	
	Population	Percent	Population	Percent
Namibia	2 113 077	100.0	2 324 388	100.0
Urban	903 434	42.8	1 112 868	47.9
Rural	1 209 643	57.2	1 211 520	52.1
!Karas	77 421	3.7	85 759	3.7
Erongo	150 809	7.1	182 402	7.8
Hardap	79 507	3.8	87 186	3.8
Kavango East	136 823	6.5	148 466	6.4
Kavango West	86 529	4.1	89 313	3.8
Khomas	342 141	16.2	415 780	17.9
Kunene	86 856	4.1	97 865	4.2
Ohangwena	245 446	11.6	255 510	11.0
Omaheke	71 233	3.4	74 629	3.2
Omusati	243 166	11.5	249 885	10.8
Oshana	176 674	8.4	189 237	8.1
Oshikoto	181 973	8.6	195 165	8.4
Otjozondjupa	143 903	6.8	154 342	6.6
Zambezi	90 596	4.3	98 849	4.3

Source: NSA, 2016a

I.4.5 Human Development Index

With a Gini coefficient⁸ of 57.2, Namibia has one of the highest income inequalities in the world (NSA, 2016a). About 27.6% of the population is classified as poor and 13.8% are classified as severely poor (WHO, 2013). The poverty level and unemployment rate are highest in rural areas, especially among women and youth (ibid). About 70% of the Namibian population is dependent on subsistence agriculture (DRFN & KULIMA, 2017).

I.5 Migration - Evidence from the past

Migrants are made up of diverse compositions or groups of people who move from one area to another for different reasons. Environmental, political, demographic, economic and social aspects are the main drivers of migration. Disasters are caused by natural hazards, such as cyclones, floods, earthquakes, drought, poverty and inequality, fragile or weak governance, urbanization, climate change and environmental degradation, whereas social unrest and armed conflicts are the main drivers for conflict-induced displacements (IOM, 2015b).

For Namibia, the most prevalent drivers for human mobility are sudden onset events such as floods and wildfires, and slow-onset events such as droughts, land degradation and loss of agricultural productivity (OPM, 2013b). Although, the country did not experience any human displacement due to the sea-level rise thus far, the fact that Namibia's coastline extends over 1,570 km along the Atlantic ocean, the risk and potential impacts of sea-level rise remains a potential threat (MET, 2011a).

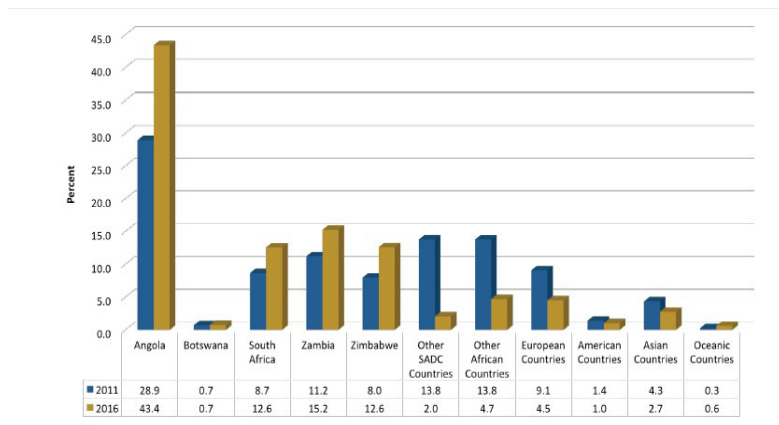
I.5.1 Immigration

There is a significant movement of people into the country, that migrate for different reasons (MHAI, 2017). Figure 1.5 below presents statistics of immigrants in Namibia from selected countries of origin between 2011 and 2016 (NSA, 2016b). Angolan nationals presented the highest proportion of foreigners in Namibia and this was shown by a significant

8 The Gini coefficient is a measure of equality or inequality that has been adopted to measure income inequalities in many countries around the world (NSA, 2016a). The Gini coefficient is measured on a scale of zero (0) to one (1), where by a measure of 0 means total equality among the population and a measure of 1 is total inequality.

increase from 2011 to 2016 while similar trends were observed from South African, Zimbabwean and Zambian nationals (ibid). In contrast, the proportion of other African, European, American and Asian countries decreased between 2011 and 2016 respectively (ibid).

Figure 1.5: Population and origin of immigrants between 2011 and 2016



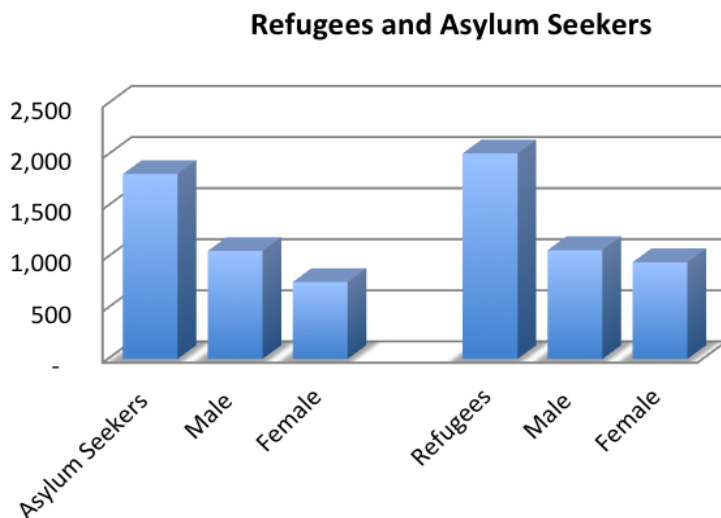
Source: NSA, 2016b

The Migration Profile indicates that immigration and emigration data at border crossings and international airports (immigration control, both arrival and departure terminals) is disaggregated (IOM, 2015a). The Migration Profile further highlights that there is a significant movement of people in and out of the country without going through designated border crossings. This is particularly common along the northern boundary with Angola, where such movements occur on a daily basis.

1.5.2 Refugees and Asylum Seekers in Namibia

The Migration in Namibia: A Country Profile 2015 (Migration Profile) indicates that by September 2015, Namibia had hosted about 2,914 refugees and asylum seekers, whilst an additional number of 1,742 former refugees from Angola applied for local integration. Table 1.1 presents the total number of Refugees and Asylum Seekers recorded between 11 January 2017 and 24 March 2017.

Figure 1.6: Number of Asylum seekers in Namibia



Source: MHAJ, 2017

1.5.3 Emigration

The Migration Profile of 2015 highlights that Namibia did not have any legal, policy, institutional or operational framework for Namibian emigrants and no mapping of the Namibian diaspora was ever carried out (IOM, 2015a).

The Migration Profile further indicates that there is limited emigration data. In addition, as reported in the Migration Profile, Namibia does not have an official diaspora engagement policy, no communication system and no database (IOM, 2015a). This means that, there is no data on Namibian emigrants worldwide.

1.5.4 Migration in Southern Africa

Southern Africa is characterized by high mobility with an increasing number of migrants from both within the Southern Africa Development Community (SADC) region and outside (other African regions, such as East and Central Africa). The movement is mostly driven by the search for employment and economic opportunities in both formal and informal sectors (IOM, 2014).

Due to socio-economic breakdown and poor livelihoods, people are becoming increasingly mobile both within their countries and across borders in search for better socio-economic opportunities and improved livelihoods (Figure 1.7).

Figure 1.7: Regional Migration Statistics for Southern Africa

Country	Total migrants	% of females/ males	Number of children	Largest age range (20–64)			Number of refugees (End 2012)
				Total	Males	Females	
Angola	87,400	52% / 48%	24,647	59,170	30,591	28,579	23,400
Botswana	146,500	45% / 55%	33,549	107,678	61,376	46,301	2,800
Comores	12,500	51% / 49%	2,863	9,113	4,465	4,647	-
Democratic Republic of the Congo	446,900	52% / 48%	108,150	316,405	148,710	167,695	65,100
Lesotho	3,100	35% / 65%	1,104	1,934	1,263	671	-
Madagascar	34,300	45% / 26%	12,177	21,060	11,920	9,140	-
Malawi	206,600	52% / 48%	50,617	132,406	63,423	68,984	6,500
Mauritius	45,000	61% / 39%	6,930	37,035	14,629	22,406	-
Mozambique	218,800	39% / 61%	87,082	125,591	77,490	48,101	4,400
Namibia	51,400	47% / 53%	10,691	33,153	30,209	15,416	1,800
Seychelles	12,100	30% / 70%	1,222	10,515	7,571	2,944	-
South Africa	2,399,200	42% / 58%	391,070	1,861,779	1,118,929	742,850	65,200
Swaziland	25,500	46% / 55%	4,514	191,251	107,100	84,150	500
Zambia	98,900	50% / 51%	25,417	67,450	34,399	33,050	25,600
Zimbabwe	361,000	43% / 57%	63,175	24,711	14,703	10,008	4,300
Region	4,149,200	44% / 55%	823,208	2,999,251	1,726,778	1,284,942	199,600

Source: IOM, 2014

1.5.5 Cross-border Families

In some parts of the country, the current national boundaries cut through villages and therefore divide communities and families to either of the national borders. In other words, in most areas along the borders of the country, it is common to find families on either side of the border, meaning that a family can be divided between two countries (Author, 2017). As a result, it is very common that Namibians living close to international borders have cross border relatives in Angola, Zambia or Botswana. In Angola for example, there are Angolan learners that attend school in Namibia crossing the borders at un-designated points of entry

on a daily basis and it is also common to find community members living near the borders with dual citizenships (TWG, 2017).

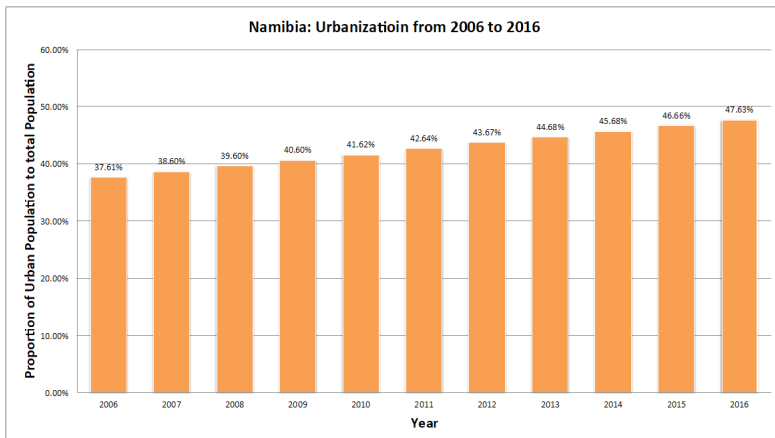
In general, people frequently cross the border to go visit their families across international borders, through non-designated ports of entry and as a result, these border crossings are undocumented (MHAI, 2017).

1.5.6 Urbanization

Urbanization is defined as the movement of people from rural to urban areas (NSA, 2015). Across the world, urbanization is taking place at an alarming rate and it is projected that by 2050, 66% of the world’s population will be living in urban areas, and Namibia is no exception (Niikondo, 2015).

Since attaining independence in 1990, Namibia has experienced a wave of urbanization (NSA, 2011). According to the Namibia Population and Housing Census, in 1991, the urban population of Namibia stood at 28% of the total population which rapidly increased to 33% in 2001, 42% in 2011 and 47% in 2016 respectively (NSA, 2016b).

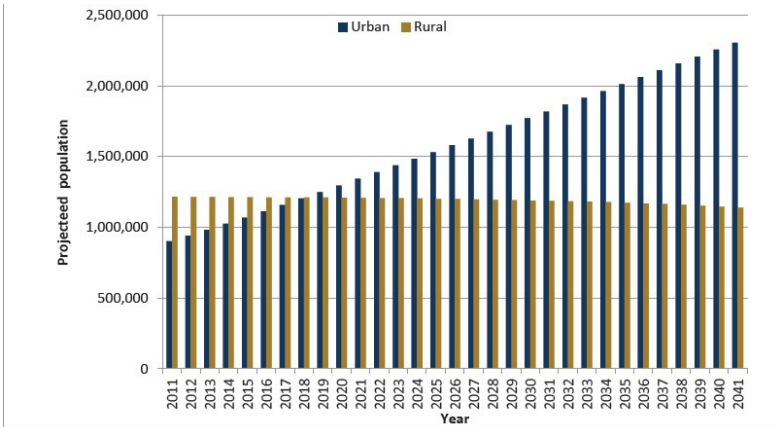
Figure 1.8: Namibia Urbanization statistics from 2006 to 2016



Source: NSA, 2016b

According to the Inter-censal Demographic Survey of 2016 (Figure 1.4), in 2011 Namibia’s rural and urban population were 57.2% and 42.8% respectively (NSA, 2016b). However, by 2016 the rural population declined to 52.1% and in contrast, the urban population increased to 47.9%, which reflects a strong rural to urban migration momentum. Urbanization is attributed to loss of livelihood and lack of employment opportunities in the rural areas. Figure 1.7, indicates that by 2041, Namibia’s rural population is projected to be about 1.25 million or 35%, which reflects a significant decrease from 57.2% in 2011 and in contrast, the urban population is projected to be about 2.35 million or 65%, indicating a significant increase from 42.8% in 2011 (NSA, 2014).

Figure 1.9: Urban and Rural Population Projections from 2011 to 2041



Source: NSA, 2014

It has been reported that the key drivers of urbanization are unemployment, rural poverty and loss of livelihood, which is attributed to natural hazards, among others (IOM, 2016). In Namibia, urbanization has resulted in the rapid expansion of informal settlements, causing high demand for municipal services (water, sewer and electricity) and increased poor housing conditions (Indongo, 2015). The capital city of Namibia (Windhoek) reported that from 2012 to 2016, the rate of urbanization is estimated at 4%, which exerts pressure on the city to provide housing and municipal services such as water, sewer and electricity (COW, 2017).

However, due to the rate of influx, the city is unable to cope and the migrants are forced to settle in areas without municipal services, which further expose them to harsh living conditions (ibid). Apart from the capital city, other urban areas like the coastal town of Walvis Bay are experiencing similar urbanization trends (WBMUN, 2016). With one of the biggest harbors in Southern Africa, Walvis Bay is particularly popular with the influx of people hoping to get jobs in the fishing factories (ibid).

1.5.7 Labour Migration

The Namibia Statistics Agency (NSA, 2015b) indicates that there is a significant measure of short-term population mobility within the country, in search for employment opportunities. This type of movement has been observed and is often associated with specific economic activities that provide short to long-term employment opportunities, such as opening of new mines, road construction, shopping malls, office buildings and other major construction projects.

1.5.8 Search for Grazing and Conflict

During drought and flood events, the affected communities are forced to migrate from one area to another, in search for grazing for their livestock. However, their movement is limited by geographical, historical and ethno-cultural boundaries, which are managed by different traditional and political authorities, and often create conflicts among communities. An example is after the concurrent droughts of 2013–2016, when the Oshiwambo speaking community members from Omusati region (Otjivikwa village) migrated to the Ruacana area in search for grazing land, which ethno-culturally belongs to the Otjihimba speaking community. This particular movement led to conflicts between the two communities. The local community (Otjihimba speaking) argued that, the incoming livestock (belonging to the Oshiwambo speaking community) would lead to overgrazing and consequently the demise of their cattle, which is the sole source of their livelihood (Regional Consultations, 2017). During the same year (2016), similar incidences of livestock migration and conflicts were reported in the Uuvidhiya and Amarika communal areas in the Omusati region, and these types of conflicts among communities are common across Namibia.



KEY CHALLENGES:

THE MIGRATION,
ENVIRONMENT AND
CLIMATE CHANGE NEXUS



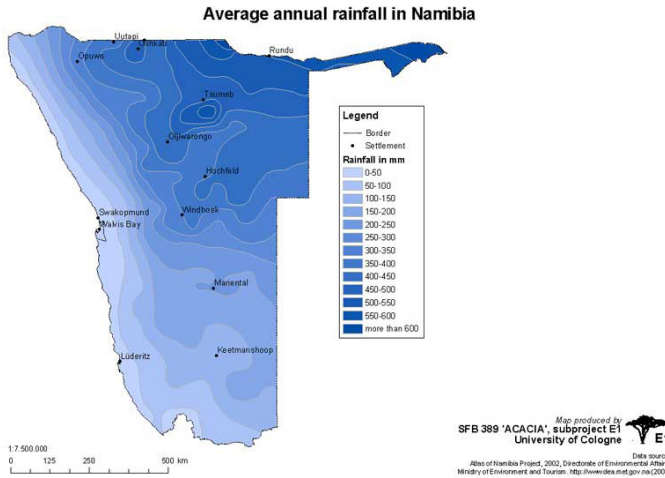
II. KEY CHALLENGES: THE MIGRATION, ENVIRONMENT AND CLIMATE CHANGE NEXUS

II. I. Introduction

Namibia is situated on the Atlantic coast of Southern Africa and its climate is strongly influenced by the cold Benguela current and the Tropic of Capricorn (MET, 2011b). The Tropic of Capricorn (also referred to as the Southern Tropic) is the most southern latitude where the sun can be directly overhead (the equivalent in the northern hemisphere is called the Tropic of Cancer) (Mendelson, et al., 2010). Literature indicates that, due to its position to the equator, the southern tropic has some of the most variable rainfall patterns in the world, hence its relevance to the topic of migration, environment and climate change in Namibia (ibid). The country's altitude range from 0 to 2,606 m, with an average of about 1,000 m above sea level (ibid).

Namibia is the driest country in sub-Saharan Africa and is classified as one of the most vulnerable countries in the world, as it suffers significant agricultural production losses due to climate change (MET, 2011b). The mean annual rainfall ranges from about 25 mm along the coast to about 700 mm in the north-east (DRFN, 2008).

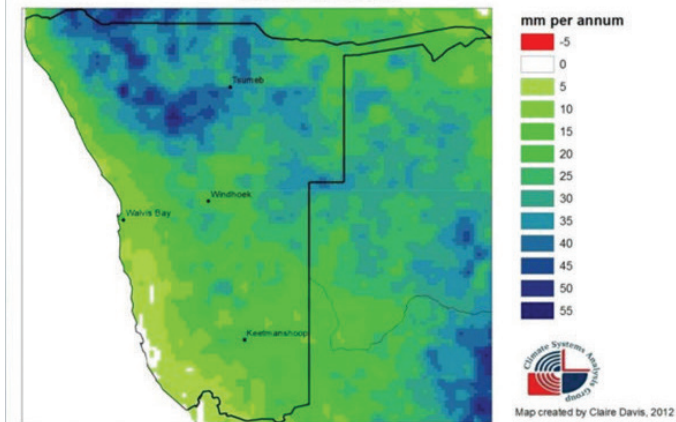
Figure 2.1: Average annual rainfall in Namibia



Sources: Mendelson, et al., 2010.

According to Davis (2011), rainfall projections for Namibia are subjected to greater variance and uncertainty. It is projected that both scenarios of rainfall decrease and increase are possible, with significant seasonal variations (ibid) Figure 2.2.

Figure 2.2 Projected change in mean annual rainfall based on statistical downscaling
Projected change in annual rainfall totals
50th Percentile



Sources: Davis, 2011.

Namibia has distinct wet and dry seasons. Most of the rain falls in the wet season (November to April), with the exception of the southern part of the country, which receives winter rainfall, around June to July (Sweet & Burke, 2000). Similar to the dry and wet season, Namibia also has distinct summer and winter seasons. In summer the average temperature in the interior is above 30oC and sub-zero degrees are experienced in winter (DRFN & KULIMA, 2017). The coastal weather is different from the interior and is much cooler than the interior, with frequent foggy days (ibid).

Water is scarce, rainfall is erratic and droughts are frequent (MET, 2012). Lack of water, particularly in the central part of the country (including Windhoek, the capital) is the key limitation to Namibia's socio-economic development (ibid). High solar radiation, low humidity and high temperatures lead to an extremely high evaporation and evapotranspiration rates (DRFN & KULIMA, 2017). Due to insufficient surface water, the country depends on groundwater. However, only about 1% of rainfall replenishes the groundwater aquifers that the country depends on (MET, 2012). There is no single perennial river within the interior and the only perennial rivers are those that are situated at the borders with other countries such as the Orange river to the south (bordering South Africa), Kunene and Kavango to the north-west and north-east (bordering with Angola) as well as the Kwando-Linyati-Chobe and Zambezi Rivers to the far north-east respectively (bordering Zambia, Botswana and partially Zimbabwe) (ibid).

Namibia is extremely susceptible to the impacts of climate change, especially the increased frequency and intensity of extreme weather events, which is exacerbating the country's already water-stressed situation (MET, 2011b). In 2013, Namibia experienced an extensive and prolonged drought throughout the country (MET, 2012). The northern and north-eastern regions are the worst affected in the country. Drought has also become increasingly difficult to predict and the two flood and drought cycles seems to alternate. Meaning, it is either a flood or drought year or both (flood during the rainy season and drought during the dry-season) (DRFN, 2008).

II.2. Sudden-onset events and their effects on migration patterns

II.2.1 Floods and Storm Surges

Namibia has distinct dry and wet seasons. The wet season refers to the rainfall period (November to April). Rainfall is extremely variable: some years with low rainfall – below average; and other years with relatively high rainfall – above average (Kapolo, 2017).

Floods may occur as a result of heavy downpour or rainfall, upon which the areas become inundated, leading to submerged agricultural land which cannot be cultivated; livestock losses (no grazing) and property damage on homesteads and roads (Sobhee, 2016).

Flash floods are regarded as one of the deadliest natural disasters in the world and have arguably the highest number of deaths per number of people affected. It is estimated that more than 5,000 lives are lost annually and this further leads to significant social, economic and environmental impacts (WMO, 2017).

- Flash and Rapid floods – occur throughout the world and the thresholds vary across regions from minutes to several hours, depending on the topographical and climatic conditions of each area (ibid).
- Slow-onset floods – occur gradually, over a relatively long period rainfall, e.g. two months of continuous rainfall.

According to Mendelson (2010), in 2008, heavy rainfall in the northern and north- eastern parts of the country, compounded by flooding from the neighboring countries of Angola and Zambia, led to flooding in the six regions along Namibia’s northern border (Zambezi, Kavango West, Kavango East, Oshana, Oshikoto, Ohangwena, and Omusati),. The 2008 floods affected about 350,000 people (nearly 17% of the country’s population) and caused the death of 102 people (OPM, 2008). In addition, the floods displaced more than 13,500 people, of which 9,200 were relocated to rescue camps and many health facilities and schools were either flooded or inaccessible (OPM, 2008).

Furthermore, the 2008 floods caused sewage ponds to overflow resulting in the pollution of ponds and oshanas⁹, from where people and livestock drink, thereby posing a threat to diseases such as diarrhea and cholera (OPM, 2008). More than 50% of the roads in the affected areas were damaged, and the agricultural harvest was reduced by more than 63%. As a result, 67% of the poor households experienced food shortages. (OPM, 2008)

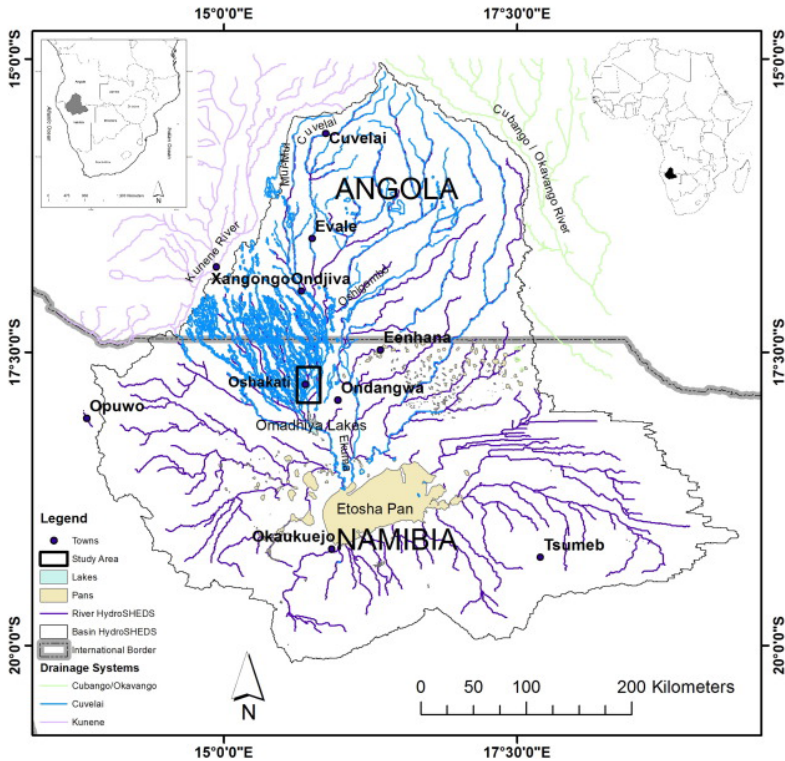
The disaster risk management reports indicate that there is a need to improve coordination among stakeholders (OPM, 2014). In addition to the seasonal floods and droughts, Namibia is also vulnerable to other impacts of climate change such as rainfall variability, overgrazing, deforestation, desertification, land degradation and sea-level rise (DRFN, 2008). These climate change phenomena induce community movement in search for improved livelihood and survival (ibid).

II.2.1.1 Floods in the North-central Regions – 2008 and 2011

The north-central area of Namibia is prone to flooding. The seasonal flooding is caused by a combination of rainfall and inundation from southern Angola. The catchment area for the Cuvelai Delta extends from southern Angola (upstream) to northern Namibia (downstream). From upstream (southern Angola) to downstream (northern Namibia), the topography flattens creating a complex network of shallow and poorly defined ephemeral watercourses known as “Oshanas”, fanning out into a 70 to 130 km wide delta known as the “Cuvelai Delta” (Marsh & Seely, 1992). (Figure 2.1).

⁹ From Southern Angola (upstream) to northern Namibia (downstream), the topography flattens creating a complex network of shallow, poorly defined ephemeral watercourses known as “Oshanas”, fanning out into a 70 to 130 km wide delta known as the “Cuvelai Delta” (Marsh, A. and Seely, 1992)

Figure 2.1: The Cuvelai drainage system stretching from southern Angola to Namibia



Source: Marsh and Seely, 1992

The north central area is divided into four regions, namely Omusati, Oshana, Ohangwena and Oshikoto region (NSA, 2017). Apart from the fact that the affected area is low lying, the impacts of the floods are aggravated by poor planning such as uncontrolled urban developments, informal settlements built in the flood prone areas, poorly maintained infrastructure (blocked culverts and storm drains), poor risk mapping and lack of integrated early warning system (Marsh & Seely, 1992).

The Hydrological Services of Namibia (HSN) in the Ministry of Agriculture, Water and Forestry (MAWF) reports that, heavy rain in the Cuvelai River Basin in Angola, combined with local rainfall in the Oshana, Oshikoto, Ohangwena, Omusati leads to flooding (MAWF, 2013).

The floods of 2008 and 2011 caused widespread damage to the natural resource based production and thereby destroying livelihood in both rural and urban areas of the affected regions (OPM, 2011). Due to the life-threatening situation of the flood disaster and the number of people affected, the government declared a state of emergency for both the 2008 and 2011 floods (ibid).

The Office of the Prime Minister further reported that the 2008 and 2011 floods did not only affect rural communities and agricultural fields, but also affected the urban and semi-urban low land flood prone areas severely, causing extensive damages to roads, bridges, clinics and schools, as well as disrupting water supplies and sewerage works (OPM, 2011).

The affected communities were relocated to higher grounds, where they could have access to shops and health facilities while government provided shelter and food (tents, mattresses and blankets) (OPM, 2014). In addition, the affected areas experienced an outbreak of the armyworm, which further destroyed crop fields. This led to compounded food security risks to the affected communities (ibid).

Table 2.1: Impact of the 2008 floods

Number of people affected	215,257
Flood related deaths	102
Number of schools disrupted	100
Number of learners affected	32,050
Livestock losses (cattle, goats, sheep, donkeys)	63,637
Hectares of crop fields submerged and destroyed	150,000

Source: OPM, 2008

When the 2011 floods occurred, the affected communities were still recovering from the 2008 floods.

Table 2.2: Impact of 2011 floods

Number of people affected	138,295
Flood related deaths	110
Number of relocation centers	97
Number of people relocated	6,601
Number of health facilities affected (un-operational)	41
Health outreach points that were inaccessible	179
Number of schools disrupted	331
Number of schools closed (for about 4 months: March – June)	217
Number of learners affected	114,520
Livestock losses (cattle, goats, sheep, donkeys)	2,194
Hectares of crop fields submerged and destroyed	57,240 <i>ha</i>
Business / retailers affected	598

Source: OPM, 2011

Although the 2017 flood was not considered a national disaster, most schools were inaccessible, forcing students, teachers and the community to walk through deep water to access school and health facilities. Nine schools were closed for about a month, as it was too dangerous for the learners to cross the streams (Oshanas) to and from school (Author, 2017).

Table 2.3: Impact of 2017 floods

Number of people affected	
Number of households affected	128
Number of people relocated	966
Number of schools closed (between 2 weeks to 1 month)	9

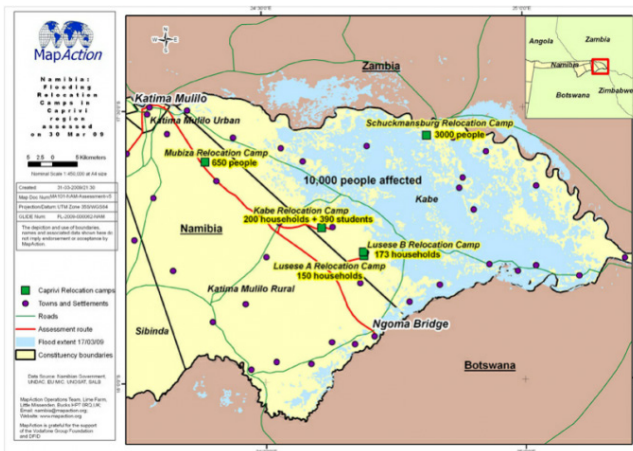
Source: Author, 2017

Due to insufficient budget allocation to assist the flood-affected communities, the living circumstances at Relocation Centers were not conducive. Tents were shared by three to four families (around 15 people per tent), insufficient food supply, shared bathrooms and poor sanitation; which presented potential health hazard conditions (ibid).

II.2.1.2 Floods in the North-east Region – 2008, 2011 and 2013

Similar to the north-central regions, the north-east region also known as the Zambezi region is also prone to seasonal flooding. The seasonal flooding is caused by a combination of rainfall and inundation from Zambia (headwaters), and the floods affect community housing, infrastructure and crop fields (NRCS, 2013).

Figure 2.3: Flood prone areas in the Zambezi region



Source: NRCS, 2013

Impact of Flooding in the Zambezi Region

According to the Regional Disaster Risk Management (RDRM) technical team, which comprises of the Government, the Red Cross and other stakeholders, in 2013, a total of 4,000 families (17,600 people), including 4,527 school children, were identified to be at risk of flooding (NRCS, 2013). A total of 2,500 families, which equates to about 11,000 people were identified to be living in the flood plains and extremely vulnerable to floods; and were evacuated to relocation camps (ibid).

Table 2.4: Total number of people relocated in 2013

Region	Number of Families affected	Total number of people affected
Zambezi	2,428	9,725

Source: NRCS, 2013

In 2013, in the Zambezi region alone (formerly Caprivi region), about 12,000 people were evacuated to 13 temporary camps due to the flooding of the Zambezi river (NRCS, 2013). The combined effects of flooding, heavy rainfall and poor sanitation, exposes the displaced communities to contaminated water and vulnerability to waterborne diseases (ibid).

II.2.1.3 Overall Flood Impacts in the North-central and North-eastern Regions

- **Displacement Factors:** Houses and residential areas are flooded due to a combination of rainfall and seasonal inundation from southern Angola. Some houses maybe located on higher ground and not flooded per say, but the surrounding area is flooded and the houses become inaccessible. In other words, even if a house is not flooded, people will be trapped and will not have access to facilities such as shops, schools, churches and hospitals, and are therefore forced to relocate.
- **Spatial Scale:** Displacement of people from their homes to higher grounds (nearest safe locality, normally within the same region).
- **Short-term:** In the short-term, displacement lasts about two to three 3 months
- **Long-term:** In the long-term, the affected community faces

livestock losses, declining agricultural productivity (cultivation) and becomes more vulnerable and susceptible to floods (loose resilience).

- Risk of drowning: particularly children and elders
- Risk of waterborne diseases
- Risk of crocodile attacks

II.2.1.4 Response and Coordination

For the 2011 floods, the UN agencies (spearheaded by the Red Cross) joined forces and assisted the government for the 2011 flood response and coordination. In addition to the support from UN agencies, a number of international and local institutions, including businesses provided donations to assist the flood victims. However, the transportation of goods to the affected areas was a challenge because most of the affected areas were not accessible by road. Thus the flood operations mostly required air transport however, it was very limited. Even though goods were available for the flood victims, there were significant delays in getting the goods to the victims (NRCS, 2017).

Unlike the 2008 and 2011 floods, the 2017 floods were not considered severe and hence not declared as disaster by the government (OPM, 2017). Although not declared a national disaster, the 2017 floods caused the displacement of people, submerged crop fields and destroyed livestock. Similarly, the Flood Emergency Management Coordinating Office (FEMCO) is only activated if the flood event is declared a national disaster by government, and as a result, in 2017 FEMCO was not activated (Ibid). Without FEMCO, the Regional Disaster Risk Management (RDRMC), which is coordinated from the Regional Councils (RC) is solely responsible for the flood emergency response, support and coordination with other partner institutions such as the Red Cross at regional level (OPM, 2017).

The case studies of floods in the north-central and north-eastern Namibia highlight Government's efforts and responsiveness to human mobility and natural hazards. The disaster response system is coordinated by the Disaster Risk Management Committees (DRMC), at national, regional and constituency levels (OPM, 2017). The DRMCs comprises of government institutions, Non-governmental Organizations (NGO's) and the private sector (OPM, 2014).

II.2.1.5 Lessons Learnt

The 2008 and 2011 floods offered an opportunity to analyze, review and strengthen national disaster risk management. In particular, the lessons learnt highlight the following:

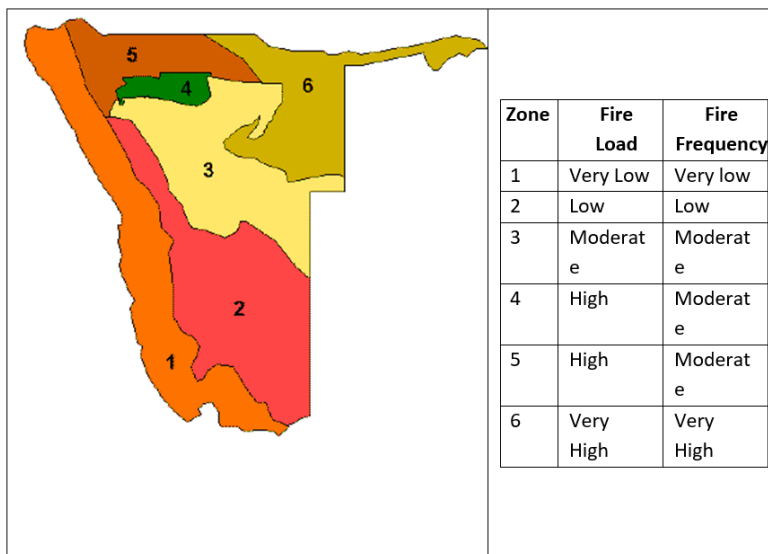
- Need to strengthen national and regional institutional capacity for early warning, response coordination, contingency planning and mainstreaming disaster risk reduction into development planning,
- Need for an integrated approach by all stakeholders to implement a sustainable recovery process and mitigation measures to reduce the impact of future flood disasters,
- Develop mitigation measures and recovery processes, including urban planning and risk assessments, to ensure that people do not rebuild in the flood prone areas.

II.2.2 Wildfires

Satellite imageries of Southern Africa show that more than 100 million hectares of tree, bush and grass savannah are burnt every year and Namibia is no exception (See Figure 2.3) (Le Roux & Trigg, 1999). It is reported that wildfires destroy about five to seven million hectares of land in Namibia annually (Schlechter, 2011). Fire destroys valuable grazing, valuable timber, thatching grass and forest products, causes air pollution, leads to declining land productivity and sometimes loss of human lives (Ibid). The damaged environment also has negative impacts on the tourism sector, which is one of Namibia's most important economic activities (Schlechter, 2011).

According to Kojwang (1999), the natural fire interval of forests in northern Namibia is more than ten years; and that finding is very important because the natural trees of that savannah ecosystem requires five to seven fire-free years before the tree seedlings are grown and strong enough to survive the next fire (Kojwang, 1999). However, at present about 60 – 85% of the savannah is burnt by the inhabitant communities every year, and as a consequence some valuable forests are lacking regeneration (ibid).

Figure 2.4: Fire regime / management zones of Namibia



Source: Trigg & Le Roux, 1999

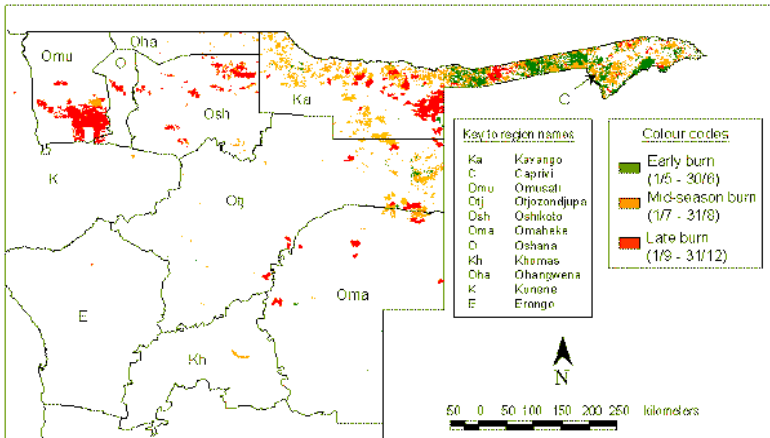
In addition to lack of regeneration and alteration of the natural forest structure, the frequent fires have severe impacts on grazing lands, and as a result, the affected communities are constantly on the move in search for grazing for their livestock (Le Roux & Trigg, 1999).

Wildfires are part of nature and play a key role in shaping ecosystems by serving as an agent of renewal and a healthy natural part of our woodland ecosystems (Burke, 2004). However, the frequency and the total area burned have been steadily increasing, climate change being a major contributing factor (Kamwi, 2016).

With longer prevalent drought spells in Namibia, it is expected that fire seasons will be extended because drier conditions will increase the probability of fire occurrences (ibid). Kamwi (2016) further narrates that more fuel for forest fires will become available because warmer and drier conditions result in broad ranges of dead and highly combustible vegetation. The consequence is that the overall area burnt is projected to increase during the dry season (August to November) as presented in Figure 2.5. However, fire can be deadly, destroying homes, wildlife

habitat and timber, and polluting the air with emissions harmful to human health.

Figure 2.5: Regions vulnerable to Wildfires



Source: MAWF, 2016

II.3. Slow-onset events and their effects on migration patterns

II.3.1 Rainfall Variability

For a highly variable and arid climate such as Namibia, detecting the variability of rainfall can be a daunting task (Dirkx, et al., 2008). Considerable spatial heterogeneity rainfall trends have been observed, but it appears as if the northern and central regions of Namibia are experiencing a later onset and earlier cessation of rains, resulting in shorter rainfall seasons (ibid). There is a significant decrease in the number of consecutive wet days across the country, and increases in rainfall intensity have been recorded. Rainfall patterns indicate that over the past ten years, the rainfall gradient has not only been declining across the country, but it is also characterized by short duration and high intensity rain storms, which are destructive in nature (Dahlberg, et al., 2008). As far as predictions for the future are concerned, it is not obvious whether Namibian rainfall will be reduced, although intensity is likely to be increased. It is important to underscore that rainfall variability is likely

to remain the key aspect of concern for Namibia's climate (Dirkx, et al., 2008). And as such, it will also have an impact on migration patterns that are caused by climate change.

II.3.2 Drought

Drought is a natural hazard that causes crop failures, livestock losses and severe socio-economic impacts to the affected communities. At a sub-continent level, droughts affect large parts of the southern African subcontinent and are mainly associated with changes in global weather patterns (Sweet & Burke, 2000).

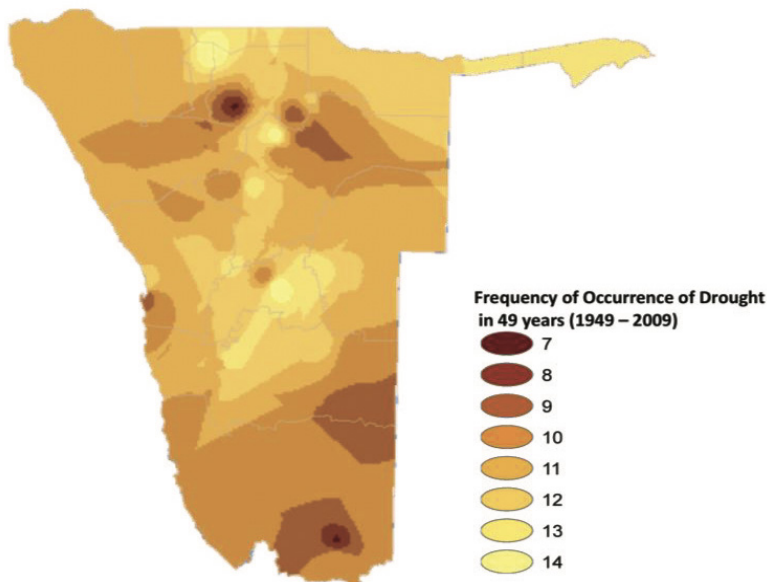
In Namibia, historical droughts affecting large portions of the country have been reported as far back as the 1930s and 1960s (Sweet & Burke, 2000). The 1970–71 droughts were declared the most devastating, experienced in pre-independent Namibia. Other droughts occurred from 1982/1983, 1983/1984, 1992/1993, 1995/1996, 1996/1997, 2008/2009 and 2013/2014 (OPM, 2014)(*ibid*).

According to Dahlberg et al. (2008), the occurrence of severe droughts have increased in the past 10 years, a trend which the meteorological reports attribute to shifts in the global circulation patterns and the El Niño effect¹⁰.

In addition to rainfall variation, Reid et al. (2007) narrated that in the 20th century, ambient temperatures have been rising at three times the global mean temperature and that the combined effects of high rainfall variation with high temperatures does not only attribute to increased drought occurrence, but the duration and severity of the drought.

¹⁰ The El Niño effect refers to the cycle of warm and cold temperatures, as measured by sea surface temperature (SST), of the tropical central and eastern Pacific Ocean. El Niño is a climate cycle and occurs as a result of the high air pressure in the western Pacific and low air pressure in the eastern Pacific and has an impact on global weather patterns.

Figure 2.6: Frequency and occurrence of droughts: 1994 – 2009



Source: Gilau, et al., 2011

II.3.3 Areas most Affected by Drought

The Kunene region is one of the regions that is most affected by drought (DRFN & KULIMA, 2017). Formerly known as Kaokoland, Kunene is located in the north-west corner of the country and the community's livelihood is dependent on livestock farming (cattle, sheep and goats) (Mendelson, et al., 2010). The Kunene region has one of the lowest annual rainfalls ranging between 100 - 300mm (OPM, 2008). As a result of the very low rainfall, the region is vulnerable to droughts, which has significant impacts to livestock and community livelihood (Mendelson, et al., 2010).

The findings of the 2012/2013 annual assessment shows that, livestock in the Kunene region was the most affected by climate variability related hazards (OPM, 2013b).

most affected (rated as severely food insecure), while Omusati, Kavango west, Otjozondjupa, Omaheke and Erongo regions are rated as highly food insecure (Ocha, 2015).

Drought affects agricultural production and livestock, which are the main sources of food for particularly rural communities in Namibia (DRFN & KULIMA, 2017). As a result, the impact of drought on food security was conducted and a vulnerability mapping was done to determine the most affected regions in the country (Table 2.5) (ibid).

Table 2.5: Exposed population and vulnerability ranking per region

Region	Population Census	Vulnerable Population %	Ranking
Erongo	150,809	17.0%	11
Hardap	79,507	19.0%	10
Karas	77,421	12.7%	12
Kavango east + west	223,352	41.3%	2
Khomas	342,141	16.3%	13
Kunene	86,856	47.7%	1
Ohangwena	245,446	34.3%	5
Omaheke	71,233	38.2%	3
Omusati	243,166	37.0%	4
Oshana	176,674	24.3%	9
Oshikoto	181,973	33.8%	6
Otjozondjupa	143,903	31.0%	8
Zambezi	90,596	34.1%	7
Total	2,113,077		

Source: info adapted from DRFN & KULIMA, 2017; NSA, 2015

Drought leads to loss of livestock and poor conditions for animals (Ocha, 2015). Poor livestock conditions result in reduced market prices and household income (DRFN, 2008). Due to the remoteness of the region and distances from the commodity supply chains, farming inputs are very costly due to high transportation costs, procurement of water installation equipment to pump water for livestock, feed supplements, and vaccinations, the lack of which further increases the vulnerability of livestock and the communities' livelihood to drought (OPM, 2008).

II.3.4 Land Degradation

Land is the basis of life, livelihood, socio-economic development and survival (Mendelson, et al., 2010). As such, land degradation is one of the major environmental concerns in Namibia (DRFN & KULIMA, 2017). Land degradation threatens the environment, the people and socio-economic development at large (Ruppel & RuppelSchlichting, 2016). In Namibia, farming is not only cultural, but it has a vital social function and about 70% of Namibia's population depends on agricultural activities for livelihood and survival (ibid).

According to the Namibia Household Income and Expenditure Survey (HIES) of 2009/2010, 23% of Namibian households depended on subsistence farming as the main source of income and that was a significant decline from 38% in 1993/1994 and 29% in 2003/2004 surveys (NSA, 2012). Despite the fact that most of the land in Namibia is used for agricultural purposes, the productivity per hectare is very low and in 2009, agricultural produce only made about 5.1% of the GDP (Ruppel & RuppelSchlichting, 2016).

In Namibia, deforestation and overgrazing are considered to be the main causes of land degradation. Due to poverty and food insecurity, communities have few alternatives to make a living and often engage in unsustainable land practices such as deforestation (clearing of forest for cultivation, timber to build houses and fire wood for energy) and overgrazing (due to overstocking) (MAWF, 2015). Deforestation and overgrazing are worsened by the fact that the resources belong to everyone and everyone tries to maximum individual benefit, resulting in what is commonly referred to as the "Tragedy of the Commons" (DRFN, 2008). This means that since the resources belongs to everyone, each person or household take or harvest as much as they can, because failure to do that will lead toothers taking them and subsequently degrading or disappearing (ibid). Degraded land is not productive and communities move to new and unexploited areas and the trend continues.

II.3.5 Agricultural Productivity versus Food Insecurity

Namibia is experiencing increased frequency of natural hazards that impact on rural livelihood and food security conditions (OPM, 2015). The 2013 drought resulted in massive reduction in crop and livestock productivity and pushed several rural households into unsustainable

coping strategies including panic livestock sales at very low prices (ibid). There was hope for the 2014 rainfall season, but the situation worsened and the drought continued 2014 (ibid). The cumulative effects of consecutive droughts of 2013 and 2014 affected agricultural productivity significantly (OPM, 2015). Since 2010, there has been a sharp decline in agricultural productivity owing to rainfall variability and droughts (Table 2.6) (OPM, 2015).

Table 2.6: Contribution of Agricultural Production to the GDP (OPM, 2015).

Year	Contribution of agriculture to the GDP (per cent)	Difference from 2010
2010	3.4	0
2013	1.9	- 44%
2014	2.1	- 38%

Source: OPM, 2015

Although the initial projections predicted normal to above normal rainfall for the 2014/15 rainy season, the season was marked with late onset of rains, prolonged mid-season dry spells and lower than average rainfall, resulting in significant reduction in crop production in most parts of the country and total failure in other parts of the country (DRFN & KULIMA, 2017).

According to the MAWF (2015), from 2008 to 2014, For the past seven years, Namibia’s food production averaged 125,000MT, which equates to about 41% of the national cereal demand (OPM, 2015). The crop assessment conducted by the Ministry of Agriculture, Water and Forestry (MAWF) in February 2015, estimated cereal production at 88,900MT, which is about 33% below the average of 125,000MT (MAWF, 2015). A second assessment conducted from May – June 2015 projects a further reduction and lower estimates in cereal production than the February estimates (ibid).

The poor agricultural productivity implies that Namibia depends on food imports. The high reliance on imported food items exposes households to frequent price changes that have significant impacts and further increases the community’s vulnerability and food insecurity (OPM, 2015).

Reports indicate that the 2015 cereal production in South Africa was also below average and estimated at only 30% of 2014 cereal production (ibid). Namibia relies on cereal imports from South Africa, and low cereal production implies a short supply versus increased demand, as a result, it has significant implications on local food market prices (OPM, 2015).

In addition to the poor crop production prospects, the failed rainfall season has resulted in a severe shortage of water and pastures for livestock, low milk production and poor livestock conditions (OPM, 2015). In areas where poor households depend on income from natural resource products such as grass for thatching, crafts, reeds, marula and mopane worms, the decrease in rainfall has resulted in reduced access to the resources of income (OPM, 2015).

II.3.6 Extreme Temperature

There is evidence that Namibia's temperature has been rising at three times the global mean temperature increases reported for the 20th century (Reid, et al., 2007). Furthermore, it is predicted with a high degree of certainty that Namibia should expect an increase in temperatures of between 1°C and 3.5°C in summer and 1°C to 4°C in winter during the period 2046 - 2065 (ibid). Maximum temperatures have been getting hotter over the past 40 years, as observed in the frequency of days exceeding 35°C. Equally, the frequencies of days with temperatures below 5°C have been getting less, suggesting an overall warming (Dirkx, et al., 2008).

The temperature increase has implications on water resources, evaporation, evapo-transpiration and agricultural productivity, which will impact on the livelihood of the people (DRFN & KULIMA, 2017). Normally, when people do not have sufficient food and water (both for themselves and their livestock), they are forced to move in search for better livelihood, which has an implication on internal migration.

II.3.7 Sea-level Rise

According to (MET, 2011a)¹³ Namibia's coastline covers about 1,570 km of the Atlantic ocean, which makes the country potentially vulnerable to the impacts of sea-level rise (ibid). Sea-level rise has a potential to cause

¹³ Second National Communication (SNC) to the United Nations Framework Convention on Climate Change (UNFCCC)

coastline erosion, flooding of coastal towns and saltwater intrusion (Harley, et al., 2006). These processes could have severe impacts on the coastal ecosystems and may affect their ability to provide ecosystem services such as provision for food (fishing), atmospheric carbon sinks, flood attenuation, natural water purification (filtering), recreation and tourism attraction (ibid). The potential impacts of sea-level rise may affect socio-economic sectors that provide employment opportunities in coastal towns, which could potentially affect the movement of people from rural areas to coastal towns (Harley, et al., 2006).

Coastal marine ecosystems provide spawning and nursery grounds for many fish species (NACOMA, 2009). Sea-level rise has a potential to inundate wetlands and low-lying areas along the coast and that may lead to increased salinity of estuaries, which would negatively affect fish spawning and the fishing industry (ibid). Furthermore, increased salinity in wetlands would decimate organisms that are not resistant to the high salinity and in turn, that may affect shore birds that feed on these organisms (NACOMA, 2009).

The cold Benguela current¹⁴, maintains the upwelling of nutrient rich waters from the cold depths of the Atlantic Ocean (about 200 – 300 m ocean depth), against the west coast of the continent, resulting in what is referred to as the “Cold Benguela Upwelling System” (MET, 2009). The cold nutrient rich waters fuel high rate of phytoplankton growth, which makes the Benguela ecosystem nutrient rich and very productive (ibid). However, with the projected impacts of climate change, the Benguela ecosystem, which sustains the rich fishery sector and socio-economic development in Namibia, is at risk of collapse.

An assessment titled Sea-level rise in Namibia’s coastal towns and wetlands conducted in 2009, classifies the Namibian coast into categories of sheltered, exposed and very exposed coastal environments (MET, 2009). The sheltered and non-sheltered sea-level rise effects are attributed to a combination of the tide effect and harsh weather. By year 2030, acceleration in sea-level rise is expected to add 20 cm to the current sea-levels (MET, 2009). Although the projected sea-level rise seems small and insignificant, the specific details of the inundation to be expected and the actual impacts that may occur are unknown (ibid).

14 Cold Benguela current, is an ocean current along the South Atlantic Ocean, originating from the South Africa (around the cape point), moving northward along the Namibian coast (at around 16o longitude), up to Angola (around an area called Benguela), from where the name “Benguela” is derived

The frequency with which the sea levels for exposed and very exposed environments are reached will depend upon the frequency expected for severe storms (ibid).

II.3.7.1. Impact on Namibian Coastal Towns

Namibia has four major towns along the coast, namely: Walvis Bay, Swakopmund, Luderitz and Henties Bay, and is projected that the potential impacts of sea-level rise would affect these towns differently. MET (2011)¹⁵ indicates that the topographies of Swakopmund, Luderitz and Henties Bay are much higher above sea level, and these three towns are not under immediate risk in the event of a moderate sea-level rise. In contrast, the town of Walvis Bay is located on extremely low ground (low elevation), and therefore vulnerable to sea-level rise (ibid).

Figure 2.8: Namibia's coastline and coastal towns and vulnerability to sea-level rise



Source: Mendelson, et al., 2010

15 Namibia's second National Communication to the UNFCCC (2011)

According to the National Census of 2011, Walvis Bay is the second biggest town in Namibia (after the capital city Windhoek) and had a population of 62,096 people (NSA, 2011). In addition to being the second biggest town in Namibia, Walvis Bay has the largest seaport in the country, making it one of the key economic role-players and contributor to the GDP (Mendelson, et al., 2010). As a result, any potential impact of sea-level rise presents significant social and economic losses, not only to the town of Walvis Bay, but the national economy at large.

The port receives about 3,000 vessels per annum and has a capacity to hold 3,875 containers (ibid). The port is not only important for Namibia, but it is also important for land locked countries (such as Botswana, Zimbabwe and Zambia) that depend on it for their imports and exports (MET, 2011a). However, in an event of sea level-rise and associated impacts, all these investments are at risk of collapse and the community of Walvis Bay (62,096 people) will be at risk of displacement.

Walvis Bay Case Assessment (MET, 2009)

Walvis Bay (Namibia's biggest harbor), is not only important to Namibia, but to many other neighboring countries (particularly the land locked countries) and is one of the 3 major towns along the Namibian coast and is exposed to the potential risk of sea-level rise. The impacts of sea level rise for Walvis Bay, brings two scenarios to the fore (Harley et al., 2006). The first is if the protective Pelican Point Sandspit remains in place and the town (including the harbor) of Walvis Bay remains a sheltered environment; and the second is, if the Pelican Point Sandspit is breached and Walvis Bay is exposed to the full impact of storms from the sea. With the sandspit still in place, by 2030, Walvis Bay will experience a sea level of LLD + 1.5m on an annual basis (MET, 2009). Enhanced coastal erosion from an estimated sea level rise of 20cm will lead to a likely coastal set-back estimated at almost 100m and such levels may be extremely destructive and hence the previously unprotected parts of the coastline may need to have new coastal defenses built to mitigate erosion along the beach of the town of Walvis Bay itself (MET, 2009).

In a scenario, where the Pelican Point sandspit is destroyed (eroded), the town of Walvis Bay can no longer be considered to be a sheltered environment, and both the town and harbor will be located on an open

coast, exposed to greatly enhanced wave activity. With no additional protection, the Walvis Bay town may be subject to sea levels of LLD+2m on an annual basis, and of LLD+3m from extreme sea levels with a return period of 100 years. Such an extreme sea level will inundate much of the town, and the coastal defenses would need to be protected, albeit at a much greater and costly exercise than the scenario where the sandspit remain intact. Further assessment may be required to understand the risk and potential mitigation measures, such as maintaining the continued viability of the Pelican Point Sandspit (MET, 2009).

A photograph of a flooded area with several thatched huts. The huts are built with a wooden frame and a thick layer of dried reeds or straw for the roof and walls. The water is murky and reflects the huts. In the foreground, there is a patch of green grass. The background shows more huts and a clear blue sky.

TOOLKIT FOR POLICYMAKERS

III. TOOLKIT FOR POLICYMAKERS

This section presents an overview of the existing legal framework and policy tools, relevant to migration, environment and climate change (MECC).

III.1 Existing policy framework and policies in the process of being elaborated

III.1.1 Migration policy

Until recently Namibia did not have explicit migration policies. With the assistance of IOM, the Namibian Migration Profile was developed in 2015 to aid the development of comprehensive national migration policies with a focus on addressing complex migration dynamics, as country of origin (from where people emigrate), transit (as a route for international migrants) and destination (intake of immigrants) (IOM, 2015).

Although some information on migration exists, the data is scattered across a wide range of ministries, departments and agencies and therefore not readily available to guide policy development. The 2015 Migration Profile provides valuable information regarding the characteristics of migration and the impact of migration on socioeconomic, as well as the political aspects in the country. This profile forms the basis for the development of migration policies to enhance data collection and management of human mobility (both internal– within and external – from outside the country).

III.1.2 Labour Migration Policy

As an output of the Migration Profile, in May 2017, Namibia validated the National Labour Migration Policy. The policy aims at strengthening rules and regulations for effective and efficient administration of labour migration and optimizes the benefits of labour migration on development (MHA, 2017). In addition, the policy aims to foster the development and implementation of a labour migration system. The policy is aligned with the Southern Africa Development Community (SADC) regional labour migration policy framework and the SADC labour migration action plan

(ibid). Article 19 of the SADC protocol on employment and labour, is specifically dedicated to labour migration and migrant workers (ibid).

Although the labour migration policy does not immediately give indications of whether the labour migration has elements of environmental events and climate change, it will generate valuable data on human mobility. It is therefore recommended that the labour migration policy and data should capture and take into account the environmental factors that impact on labour migration.

III.1.3 Environment and Climate Change Policies

As a global response to the threat of climate change, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992. Namibia ratified the Convention in 1995 and subsequently agreed to establish national programmes to mitigate climate change and to integrate climate change into its national development plans, particularly activities focusing on agriculture, energy, and the seacoast (MET, 2009). The UNFCCC recognizes the vulnerability of developing countries such as Namibia to climate change, and calls for efforts to assist developing countries to adapt to the projected impacts of climate change such as sea-level rise (MET, 2009).

III.1.3.1. National Policy on Climate Change, 2011

The impacts of climate change on natural resources and ecosystem services affect the livelihood of communities (MET, 2011b). Due to the direct dependency on the local natural resources and limited capacity to adapt, rural communities carry the highest degree of vulnerability to the impacts of climate change and hence the need to integrate disaster-induced displacement into existing policy frameworks in Namibia (ibid).

The National Climate Change Policy of Namibia is a legal instrument aimed at addressing the projected impacts of climate change. The policy outlines strategies and measures to mitigate associated impacts, reduce vulnerability and improve the country's adaptive capacity (ibid). However, the climate change policy is not explicit on environmental migration and the associated impacts thereof.

Therefore, it is recommended that environmental migration should be incorporated into the National Climate Change Policy, in order to make

provisions, plan ahead and mitigate the inevitable impacts of human mobility due to disaster and natural hazards.

III.1.3.2. Disaster Risk Management Act, 2012

The National Disaster Risk Management Act (Act No. 10 of 2012) makes provisions for the establishment of institutions for disaster risk management; integration and coordinated disaster management approach that focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post-disaster recovery; the declarations of national, regional and local disasters and to provide for the establishment of the National Disaster Management Risk Fund and incidental matters.

Namibia's Disaster Risk Management Policy framework is response-orientated (UNDP, 2014). This implies that the policy is more inclined to response mechanisms after the event and provides no or minimal direction on what should be done to mitigate impacts, before the event occurs. Although the country's sectoral laws contain provisions that are relevant to disaster risk reduction (DRR), the progressive content of laws and policies is often marred by inadequate or ineffective implementation (UNDP, 2014). Furthermore, resource and capacity constraints hinder the establishment of the institutional structures and procedures proposed in the legal framework, especially at regional and local levels (ibid).

At national level, the overall coordination and flood response mechanisms rests with the National Disaster Risk Management Committee (NDRMC), under the Office of the Prime Minister (OPM, 2011). However, despite the good response and coordination during the flooding events, there seems to be no long-term strategy to mitigate the impacts of floods in the future. Therefore, a long-term mitigation and adaptation strategy is recommended.

III.1.3.3. National Disaster Risk Management Policy

The National Disaster Risk Management (NDRM) policy of Namibia is the instrument that gives direction and defines the parameters for the application of the concept of total disaster risk management within the established National Disaster Risk Management System in Namibia (OPM, 2012a). The policy goal is to contribute to the attainment of

sustainable development in the country, through the strengthening of national capacities in order to significantly reduce disaster risk and build community resilience to withstand and cope with disasters or natural hazards (ibid).

To achieve the goal, the NDRM policy is guided by five policy objectives. These policy objectives are consistent with priorities for action identified in the Sendai Framework for Action 2015-2030, to which Namibia is part of (OPM, 2017). The policy objectives are: to make disaster risk reduction a priority at all levels in Namibia by establishing sound, integrated, and functional legal and institutional capacity within the established National Disaster Risk Management System, to enable the effective application of the concept of total disaster risk management; improve risk identification, assessment and monitoring mechanisms in Namibia; reduce underlying risk and vulnerability factors by improving disaster risk management applications at all levels; strengthen disaster preparedness for effective response and recovery practices at all levels, and to enhance information and knowledge management for disaster risk management.

To achieve the objectives, the policy has four broad strategies, namely: the integration of disaster risk reduction into sustainable development policies and planning at all levels, the strengthening of disaster risk management structures, mechanisms and capacities to build resilience to hazards at national, regional, constituency and community levels, the incorporation of risk reduction mechanisms towards emergency preparedness, response and recovery programs and building of multi-stakeholder partnerships at all level to contribute to the implementation of total disaster risk management.

III.1.4. Integrated Regional Land Use Plans

One of the key objectives of an Integrated Regional Land Use Plan (IRLUP) is to identify and recommend most appropriate and sustainable land use that is most sustainable for the particular region and, or specific areas in that region, in terms of both environmental and economic sustainability. The various advantages and disadvantages of land use need to be weighed against factors such as environmental protection and economic growth. Ultimately, the land use should bring benefits to the people living in the region. However, some land uses may seem to have the highest benefits

for the people in the short-term, but such land use might not be the best land use in the long term sustainability (MLR, 2017).

The Ministry of Lands and Resettlement (MLR) developed regional land use plans, but these plans are not explicit and exclude strategies to deal with land allocation to people displaced by environmental factors such as droughts and floods. In addition to the regional land use plans, through the traditional authorities and communal land boards, the MLR administers the allocation of customary land rights (rights for communal settlement, cultivation and grazing) yet again this land allocation framework does not make provisions on how the people or communities displaced by environmental hazards will be assisted.

III.2 Coordination and information gaps

The MECC assessment highlights that there is a need for consolidation of national policies related to migration, environment and climate change (MECC), and such policies should consider migration as an adaptation strategy and coping mechanism against the negative impacts of climate change, land degradation, land management and urbanization. Socio-economic development and improved community livelihood will enable vulnerable communities to withstand and build resilience against natural hazards.

The displacement of people due to natural hazards, give impetus to internal migration and urbanization. However, the current policy framework does not highlight the potential threats posed by urbanization and there are no appropriate policy tools and, or response mechanisms to address such challenges. Therefore, there is a need to develop specific policy frameworks to deal with the ever-increasing challenges of urbanization, with emphasis on sustainable urban development planning.

Furthermore, Namibia has developed regional land use plans, but these plans exclude strategic provisions to deal with the displacement of people in the country.

CONCLUSION



IV. CONCLUSION

The impacts of climate change in Namibia are evident, water is scarce, rainfall is erratic and droughts are frequent (MET, 2012). The country is vulnerable to natural hazards, especially droughts and floods. Although occurring at different spatial and temporal scales, floods have become recurring events (occurring almost every year) and the impacts thereof seem to be worsening each year (MET, 2011a). Natural hazards and climate change affect a wide range of social and ecological systems that are vital for the communities' livelihoods, which has a major implication on food security and leads to forced migration (OPM, 2017). Over the past few years (about ten years), the rainfall received across the country has not only been below average, but it also shows significant changes in pattern (Dahlberg & Wingqvist, 2008). The data shows that rainfall is now more characterized by short duration, high intensity storms, as opposed to long duration and low intensity storms (ibid).

The constant occurrence of droughts and floods is affecting the communities' resilience and ability to recover from these livelihood-damaging events (MET, 2011a). At present, the displacement of people due to floods and droughts is mostly seasonal, meaning the affected communities do return to their homes. However, persistent droughts and floods have increased communities' vulnerability to food insecurity, which negatively affects their livelihoods and coping capacities, and thereby reducing their resilience. With decreasing resilience and declining livelihoods, the affected communities are now forced to seek alternative homes, leading to increased internal migration, which fuels the rural-urban migration momentum (Mendelson, et al., 2010).

In addition to the seasonal floods and droughts, Namibia is also vulnerable to other impacts of climate change such as rainfall variability, overgrazing, deforestation, desertification, land degradation and sea-level rise. These phenomenon lead to forced migration (both individuals and households), as communities migrate in search for improved livelihood and survival (NSA, 2016a). The livelihood of rural communities in Namibia is heavily dependent on agricultural production (livestock and crop production) and changes in rainfall and weather patterns have an enormous impact on the livelihood of rural communities. The declining livelihood forces the affected communities to migrate in search for grazing and arable land, leading to competition for resources (grazing, water, crop fields etc) and

conflicts among the affected communities. The migrating communities are accused of causing overgrazing and ultimately, livestock losses.

Although fire stimulates plant re-growth (new grass), the re-growth only occurs after some time (long-term e.g. 3 months), but in the short-term, fire affects grazing and other forest resources, which are the basis for communities' livelihood. As a result, the affected community is forced to migrate to other areas in search for grazing for their livestock and other forest resources for survival. Wildfires occur in high rainfall areas with abundant vegetation biomass (fuel load) and because of the high rainfall yield and abundant vegetation these are the same areas with the highest density of people. As a result, fire leads to the displacement of people in the affected areas every year but the impacts of fire on the affected communities are not documented.

The potential impacts of sea-level rise present some risks to the country's coastal towns. Namibia has about five major towns along the coast, most of which are located on high ground (high elevation) and are not under immediate risk of sea-level rise. In contrast, the town of Walvis Bay, which is the biggest coastal town and economic hub for the country, is located on extremely low elevation and carries the highest risk of sea-level rise, displacement and forced migration.

Despite the country's vulnerability to climate change and associated human mobility, there is lack of policy framework that specifically addresses the needs of the people displaced by environmental phenomenon. Migration can also be explored as an adaptation strategy for the displaced communities and should be incorporated into the national disaster risk management policies.

The current information relevant to MECC is scattered across a wide range of ministries, departments and agencies and thus inaccessible or not readily available to guide policy formulation or to support the interlink-ages between migration, environment and climate change.

The MECC assessment highlights gaps and recommends pro-active measures to address information and policy gaps in relation to disaster risk management, climate change adaptation and environmental migration. In addition, the MECC assessment is a tool that can be used to enhance policy mainstreaming into the existing policy framework.

RECOMMENDATIONS



V. RECOMMENDATIONS

V.I Data Collection and Management

- At present, information relevant to MECC is scattered across a wide range of ministries, departments and agencies and thus not readily available. Therefore, there is a need for national consolidation, integration and coordination of information relevant to migration, environment and climate change (example, for consideration and coordination by MET or NSA).
- Due to lack of MECC data, there is limited evidence to support the interlink-ages between migration, environment and climate change. Hence, it is not easy to isolate environmental factors from other migration factors such as urbanization or social unrest. Thus, there is a need to capture, integrate and interpret MECC data in order to substantiate evidence and highlight the impacts of climate change on human mobility in Namibia, which can be attributed to environmental migration.
- Improve data collection for international migration (cross border) and capture additional information at immigration entry points such as the reason for migration, with emphasis on environmental migration aspects, as necessary.
- Improve data collection on internal migration by capturing the movement of people within the country and highlight the displacement and mobility factors, in order to ascertain the extent to which the movement of Internally Displaced People (IDP) is influenced by environmental factors.
- At present, the impacts of fire on communities and human mobility are unknown. Thus, there is a need to improve data collection and document the impacts of wildfires on the forests, grazing, livestock and communities' livelihood, including human mobility, both during and after the wildfire.
- Capture environmental factors by adding relevant MECC variables to regular national appraisals such as the household expenditure survey (HHES), Inter-censal Demographic Survey (IDS), National Census, National Agricultural Census, etc.
- Capture MECC data during national disasters for all natural hazards leading to the displacement of people (regardless of the magnitude), even if such events are not declared as national

disasters. The non-activation of the national response and data capturing for events that are considered insignificant, results in data limitation (disjointed) and makes it rather difficult or impossible to develop trends on the impacts of climate change and human mobility.

V.2 Research

- Research and data capturing should cover the full cycle of the event (flood, drought or fire) and the impacts of migration on the environment at the place of destination. At present, the data capturing is mostly done during the peak of the event (e.g. flood or drought). However, such approach results in data limitations, because it only focuses on one out of three (1/3) phases of an event. Hence the recommendation that data capturing should cover the full cycle of the event, before, during and post displacement, in order to present the full picture (tell a full story, (e.g. what happened before, during and after the event)).
- Overall, there are significant information gaps and hence the need to develop specific research programs to address the MECC research gaps. This can be done by adding appropriate variables to existing national research programs or developing new and dedicated MECC research programs, for consideration by the National Commission on Research Science and Technology (NCRST), the Namibia Statistics Agency (NSA) and the Ministry of Environment and Tourism (MET).
- In addition, there is a need to highlight the relevance and importance of research needs with universities such the University of Namibia (UNAM), Namibia University of Science and Technology (NUST) and the International University of Management (IUM).

V.3 Migration as an Adaptation Strategy

- Often, migration is perceived or construed as a negative phenomenon. However, migration can also be adopted as an adaptation strategy to mitigate the impacts of a particular event (e.g. flood, drought or fire). This implies that migration can be planned and through early warning system (e.g. for a looming drought or flood), the susceptible community can migrate to safer areas, before the disaster occurs.

- History indicates that the strategy to move from one area to another as an adaptation has been used over generations. The movement is either to avoid an adverse situation at the location of origin or in search for better livelihood and survival, which is mostly adopted for short-term, but also applicable for long-term. Specific examples for Namibia are as follows: (a) The short-term movement of livestock to areas reserved for grazing during the dry season (known as ohambo in both Oshiwambo and Otjiherero vernaculars), which is basically a form of rotational grazing. The challenge to this practice is that nowadays, some people selfishly occupy the grazing reserve areas permanently. (b) Circular movement of people in the Zambezi region, where communities retreat to higher ground during the rainy season as the lower grounds (flood plains) are inundated and as the flood subsides, the communities move back to the lower grounds, thrive from the fish, use the nutrient-rich alluvial soils for crop cultivation and use the abundant grazing for their livestock.

V.4 Building Community Resilience

- The lack of communities' ability to cope with the adverse effects of environmental events, lead to forced migration and disrupts socio-economic activities such as food security (flooded crop fields and food storage facilities, or loss of livestock due to drought), education (closed schools), health (no health facilities in the relocation areas), etc. As a result, there is a need to build community resilience, and develop capacities to mitigate and withstand such impacts, thereby preventing forced migration.
- Conduct a vulnerability mapping of communities that are most at risk of particularly recurrent events (e.g. flooding in a particular locality) and build resilience against such events.
- Identify and advocate the implementation of interventions that capacitate communities and increase their resilience in response to environmental shocks.
- Mainstream climate change adaptation (CCA), into all strategies at national and regional levels.

V.5 Displacement

- With the unpredictable impacts of impacts of climate change,

the magnitude of environmental events and displacements of communities are unknown. In the event of displacement, ensure that there are functional national and regional structures to deal with both short and long-term displacements.

- Continue with the shelter provisions for displaced communities. However, such shelter localities presents new challenges and there is a need to improve (a) the provision for shelter (multiple families sharing one tent), (b) improve the quality and the extremely high toilet ration (e.g. 50 people per toilet), (c) improve the quality and high bathroom ratio, and (d) other social aspects such as unplanned pregnancies.
- Often, provisions are made for people displaced internally (within the country). In contrast, there is often no provision made for cross border displacement (from other countries), and there is a need to explore possibilities at both national and SADC levels.

V.6 Policy Framework

- All information relating to migration, environment and climate change should be consolidated, and should be made available to provide guidance during discussions on disaster risk management policies, climate change adaptation and human mobility policy tools.
- The assessment recommends policy mainstreaming and integration of MECC aspects into the existing legal and policy frameworks. The policy integration has potential to enhance data cohesion and aid the development of evidence based policy instruments pertinent to environmental migration.
- There is a need to review and harmonize relevant national policy frameworks such as, the Climate Change Policy, Disaster Risk Management Act, Disaster Risk Reduction Policy as well as national planning documents such as the current National Development Plan (NDP5), National Biodiversity Strategy and Action Plan (NBSAP), and the Regional Land Use Plans (RLUP), to mention but a few.
- Policy should be geared towards developing pro-active measures before disasters occur as opposed to re-active and disaster response oriented approaches (action after the event). Although both disaster risk management and disaster risk reduction policy

instruments exist, the response programs are pre-dominantly disaster risk management oriented, with limited input into disaster risk reduction. Pro-activeness (action before the disaster occurs), will enhance the communities' preparedness and capacity to reduce the risk of disaster.

- There is a need to improve and monitor the implementation of existing laws and policies, such as the provisions in the Disaster Risk Management Act relevant to disaster risk reduction and allocation of resources to overcome capacity limitations hindering the establishment of institutional structures and procedures proposed in the Act, especially at regional and local levels.

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