The role of institutions in supporting coastal communities at risk from climate change: A case study of Buffeljagsbaai, South Africa

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ABSTRACT

Coastal communities are dependent on marine resources which provide their households with food and income. Fishing communities are considered the poorest of the poor and face many challenges that render them vulnerable. Climate change further exacerbates these challenges making fishing communities amongst the most vulnerable groups to coastal-related risks including sea-level rise and extreme weather events. Often, these fishing communities are neglected and excluded from policies and decisions concerning coastal and fisheries management as well as climate change adaptation. Management is often fragmented across institutions that are mandated to govern coastal resources and coastal areas. The study uses Buffeljagsbaai as a case study lens to understand the nature of coastal risks faced by marginalized coastal communities on the south west coast of the Western Cape Province in South Africa. It investigates how coastal risks related to climatic, social and economic factors affect livelihoods and examines the roles of various institutions in responding to, engaging with, and supporting the Buffeljagsbaai community as they confront coastal risks. Qualitative data collection methods were used to address the objectives of this study and included semi-structured interviews with community members and officials in relevant government institutions, as well as facilitated a community focus group discussions and participant observation. The analysis revealed coastal- related risks have a major impact on the livelihoods of coastal communities. However, over time, the community has diversified their livelihoods in order to adapt to these risks. Findings reveal that women in the case study site have developed more diverse livelihoods making them more resilient to climate change than the fishermen, who are largely dependent on fishing and are consequently more vulnerable to coastal- related risks. In addition, the community has not been given access to coastal resources and where permits have been issued, these have many restrictions. As a result, the community has resorted to "poaching" to provide food and an income for their households. The government institutions that are responsible for various aspects of resource management, disaster risk reduction, poverty alleviation and socio-economic development, are largely absent in the community. The lack of government presence in and support to this community, also referred to as limited statehood, has led to distrust and the reliance on non-governmental organisations and other stakeholders to fill this gap.

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ACRONYMS AND ABBREVIATIONS

CAS	Coastal Access Study.
CFGD	Community Focus Group Discussion
CML	Coastal Management Line
CMP	Coastal Management Program
DEFF	Department of Environment Fisheries and Forestry
DRDLR	Department of Rural Development and Land Reform
DTI	Department of Trade and Industry
IR	Interim Relief
MCM	Marine and Coast Management
NGO	Non-governmental Organization
OCCRF	Overberg Climate Change Response Framework
ODM	Overberg District Municipality
OLM	Overstrand Local Municipality
SA	South Africa
SLA	Sustainable livelihood Approach
SSFP	Small- scale Fisheries Policy
SSI-C	Semi- structured Interview with a member of the community
SSI-I	Semi- structured interview with institutional actors

CHAPTER ONE: INTRODUCTION

1. Introduction

Coastal regions are dynamic zones situated at the interface between the ocean and land. These regions house an array of ecosystems and habitats that support both marine and terrestrial species. Many civilizations around the world have been established around coastal regions due to their abundance of resources, transport and their aesthetic features; hence, a large percentage of the global population is situated in large cities and towns on the coast.

The coast is also home to small-scale fishing communities who often have a long lineage of engaging with the ocean and are dependent on its resources as a source of food and livelihood. For many small-scale fishing communities, fishing is more than just an occupation, it is a way of life (Cinner et al., 2012; Jarre et al., 2013). Small-scale fishing communities are often considered the poorest of the poor and face many challenges rendering them vulnerable to change (Allison et al., 2012). These challenges may include, among others, lack of access rights to land and resources, unemployment, food insecurity, livelihood instability, poor health, poverty, as well as climate- related changes. Not only do small-scale fishing communities have to deal with unjust laws and limited institutional support (Bennett et al., 2015), they also tend to be affected dramatically by climate change as it induces several changes on the coast including sea- level rise (SLR), increased tidal inundation and flood frequency, acceleration of erosion and, as result, these changes on the coast can affect small-scale fishing communities and their livelihoods.

The co-dependency of the ecological and social systems on the coast means that the vulnerabilities of small-scale fishing communities are intrinsically linked. Coastal risks such as sea- level rise or extreme weather events have direct impacts on the livelihoods of small-scale fishing communities but also jeopardize their safety when going out to sea (Thorgerson et al., 2015; Cinner et al., 2012; Dolan and Walker, 2006). Climate change coupled with anthropogenic induced changes, threatens coastal ecosystems and marine species through changes and alteration in the productivity, abundance and distribution of marine species, subsequently affecting economic and social systems, especially households that are dependent on marine resources.

The intertwined relationship of coastal risks and the vulnerability of small-scale fishing communities require the assistance of institutional actors to adapt to coastal risks (Weber de Morais et al., 2015). Various institutions, including different departments of government, local municipalities, non-government organisations (NGOs) and the private sector, play a role in supporting coastal communities and can provide the resources, knowledge and expertise, to support upliftment and raise the standard of living for coastal communities. Institutions can be defined as large systems with a combination of rules, plans, decision-making, programs and strategies that give rise to social practices, guide and allocate roles to people in these practices (Gupta et al., 2010). Institutions have immense power over society's well-being, livelihoods and ultimately their lives. The main purpose of government institutions is to serve the people of their nation by protecting them from harm and ensure every decision is for the public good. Without guidance from institutions like the State/government, there would be a lack of attention given to specific priorities and issues linked to development (Spires and Shackleton,

2017). Over the past decade, numerous papers have been published focusing on institutions, their role in coastal management, and in many approaches and frameworks for coastal management, institutions are depicted at the centre (Morse and McNamara, 2013; Scoones, 2015).

This study uses Buffeljagsbaai, a small traditional fishing community located along the south west coast of the Western Cape province in South Africa (SA), as a lens to understand the perceptions of the community about increasing coastal risks. The study explores the role of various institutional actors in engaging with and supporting this community deal with and adapt to coastal risk and build resilience. Although Buffeljagsbaai is a small community, there are several institutions that influence the people's lives in terms of resource access and livelihood security as well as the extent to which the community can cope with and adapt to coastal risks.

The community has been fishing along the coast since they first established themselves in the early 1900's. They have noticed changes in their environment, both terrestrial and marine, over the past two decades (Aziz, 2017). The community does not solely depend on fishing and some community members participates in other livelihood activities to supplement their income. The community is involved in harvesting of marine resources as well as various post- harvest activities. This allows the community to diversify their livelihoods and generate an income when they cannot go out to sea. Although the community has other means of making a living, these activities mostly require access to marine resources. Relying on the ocean for food provision and being situated 38km from the nearest town (Gansbaai) makes it challenging for the community to find other work, subsequently increasing their vulnerability if their access to marine resources is restricted. Since many coastal communities' live "hand to mouth", having support from institutional actors can make a difference to their vulnerability context. Without this support, it makes it difficult for them to bounce back from challenges associated with coastal risks, unemployment and poverty.

Small-scale fishing communities in SA have gone through a great deal of hardship prior to the rise of democracy in 1994. During the Apartheid era in SA, small-scale fishers along the coast were systematically excluded from access to marine resources through discriminatory marine laws to industrialization, industrial racism and privatization of resources through the use of quotas (Isaacs and Witbooi, 2019; Menon et al ., 2019; Sowman, 2006). The beginning of democracy in SA in 1994 was a turning point that accelerated a new law transformation process that sought to address the past injustices and give a voice to those marginalized communities. The post-apartheid South African government adopted neo-liberal economic policies, and at the same time put forward socially oriented policies as found in the Reconstruction and Development Program (RDP) (Sowman, 2006). This led to coastal communities having great expectations and high hopes that the government would deliver on its promise to grant better access to marine resources to fishing communities. However, by early 2000, coastal communities were increasingly frustrated by the lack of access to marine resources and began mobilizing to demand rights (Sowman et al., 2014). This led to the court action and a ruling by the Equality Court that the Minister must develop a policy that recognizes small-scale fishers and immediately provide Interim Relief (IR) measures until the policy was finalized (Sowman et al., 2014; Isaacs, 2011; Sowman 2006). After five years, the Small-Scale Fisheries Policy (SSFP) was promulgated in 2012 and sought to protect fisher rights, ensure that fishing communities received access and benefits from marine resources, and required participation of fishers in decision-making processes. However, the SSFP has not been fully implemented

although rights have been granted to approximately 11000 small-scale fishers in three provinces. In the Western Cape, rights have still not been allocated leaving fishing communities restless and anxious about their situation.

Post- apartheid, there were some improvements in the Buffeljagsbaai community through the implementation of the IR measure. With the promulgation of the SSFP there was a progression toward the acknowledgement of small-scale fisheries (SSF) as a legal sector. With the spotlight on SSF in the late 2000s, many opportunities seemed possible through the help of NGO's, private companies and government. This gave the community hope for improved socio-economic circumstances and recognition and respect of small fishing communities. However, 26 years after the advent of democracy, the fishing community of Buffeljagsbaai is still marginalized, have not been allocated their fishing rights and are struggling to meet basic needs and deal with risks that threaten their livelihoods.

1.1. Rationale

Previous research conducted in Buffeljagsbaai, provided insights into the vulnerability context of this community (Aziz, 2017) and raised questions about the role of institutions in addressing vulnerability and building adaptative capacity. Buffeljagsbaai is a small community situated along a rocky coast in the southern Cape. During the cold winter months, the community experiences flooding from storm surges and fear that strong winds will destroy their roofs. These flood events are not uncommon to the area, yet as the community expands and new houses are built, the flooding is more frequent and severe since the 1970s and the risks have increased (Department of Environmental Affairs and Development Planning, 2011). Buffeljagsbaai is an example of a community experiencing multiple coastal-related risks as well as hardship since their fishing and basic rights have not been realized. Their circumstances are being affected by the actions and decisions of several governance institutions. Local fisheries play an important role in coastal communities as it is a key source of food security, income and livelihoods. However, fishing is a high-risk occupation and fishers face many challenges such as uncertain and unpredictable outcomes regarding the status of fish stocks, unemployment, poor coastal management, health issues and so forth (Bene, 2009). Climate-related risks, further exacerbate these challenges, making fishing communities amongst the most vulnerable to coastal- related risks including SLR and extreme weather events (Allison et al., 2005; Meur-Férec et al., 2008; Reguero et al., 2014). Often, these fishing communities are neglected or excluded from climate adaptation policies and plans because they are not considered a significant economic player and don't contribute much to the gross domestic product (GDP). In SA and the Western Cape in particular, there is a much greater focus on the industrial fishing sector who are seen as an important economic actor and have more power to influence government policy and implementation practices. Thus, coastal communities such as those at Buffeljagsbaai are particularly vulnerable to coastal risks.

1.2.Aim

The aim of the study is to understand the Buffeljagsbaai community's perception of coastal risks and its impacts on their livelihoods, as well as determine their adaptation to these risks. Lastly, to understand the role different institutions play in addressing and supporting adaptation to coastal risks at the local level.

1.3.Objectives

- To identify and understand key livelihood strategies employed by the Buffeljagsbaai community,
- To identify coastal risks from the perspective of the Buffeljagsbaai community, and explore the impacts of these risks on their lives and livelihoods,
- To explore the strategies that the community employs to adapt to coastal risk
- To identify and document the roles of institutional actors involved in the community,
- To determine the extent to which institutions respond to and engage with issues of coastal risk faced by coastal communities like Buffeljagsbaai, and
- To understand how the community perceives these roles and responsibilities of, and the support provided by the various institutional actors in dealing with coastal risks in Buffeljagsbaai and
- To reflect on relationships and dynamics between the community and with institutions with some responsibility or interest in the affairs of the Buffeljagsbaai community.

1.4. Study Area

Background

Buffeljagsbaai is small rural fishing community situated roughly 199 km north east of Cape Town. The Buffeljagsbaai community consists of a few rows of houses with roughly 250 residents and are predominantly Afrikaans speaking. Both men and women make a living from fishing at sea and harvesting marine resources. In most cases, the men go out to sea

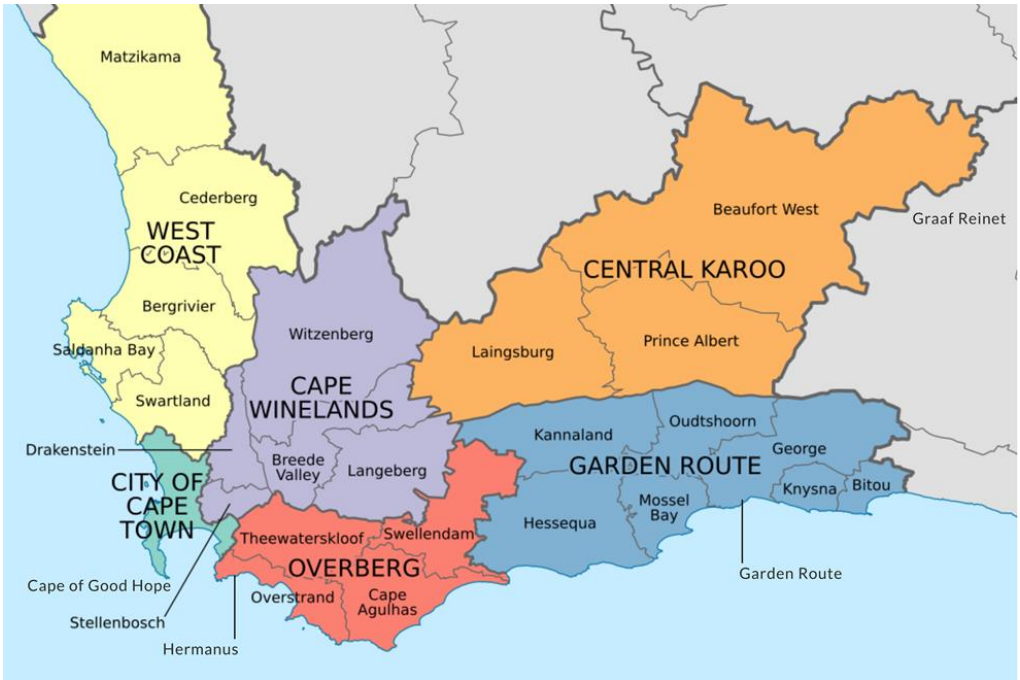


Figure 1: Map of the Overberg District Municipality within the Western Cape Province ("Districts – Western Cape Triathlon", n.d.)

while the women in the community play an important role in cleaning and processing resources as well as marketing their products. This settlement is located in the Western Cape province which comprises five district municipalities which are further divided into local municipalities. Buffeljagsbaai falls under the Overberg District Municipality (ODM) and the Overstrand Local Municipality (OLM) that has responsibility for various aspects of coastal governance and management. The ODM covers a vast stretch of the coastline that is bordered by the Indian Ocean in the south.

The community was founded by two families of colour in the 1920's, Johannes Swam and his wife, and the Groenewalds family, who were then later joined by the Claasens family. Johannes Swam used to work inland as a farm labourer at Elim and would regularly visit the bay for fishing and holidays. While Johannes was working on a local fishing boat, he was able to collect enough driftwood and timber from a wrecked ship at Quion Point, to build a thatch cottage and a little boat to start fishing independently (Biswas, 2012). There is some uncertainty as to who owned the thatched cottage and what family was the first to make their roots in Buffeljagsbaai. Later in the 1940's some white families owned houses and resided in the Buffeljagsbaai community. This created some conflict as it was during apartheid and areas were largely segregated along racial lines. The government tried to remove the "coloured"[1] community from Buffeljagsbaai in 1936 but later decided to allow them to remain there. However, they had to make monthly payments to the Department of Agriculture, of 10cents per month and boat owners had to pay R2 each year to reside in the area. Over the years, more people began to settle in the area building wooden houses made from drifthood and have relied on fishing for their livelihoods. In 1970, a few apartheid social houses were built which led to the community expanding in size. Members of the community as well as a representative from the Buffeljagsbaai Abalone Farm claim that the land was given to the people of Buffeljagsbaai by Queen Victoria.

The Buffeljagsbaai community is involved in other livelihood strategies to generate income such as harvesting intertidal marine resources, *Laminariales* (kelp), poultry farming, selling and marketing of marine resources and home-made goods to local towns and festivals. There are various institutions involved in management of resources and regulating the livelihoods of the community. For example, the community is given different types of permits by various government departments, which allows them to harvest certain species of fish or harvest products from the land, however some permits need to be bought (recreational permits) and these may have a restriction on what may be harvested and sold. At the moment the community has IR have permits for selected marine species which include *Jasus Lalandii* (west coast rock lobster or locally known as crayfish), *Donax serra* (white mussels), selected line fish species, and red bait (unlimited may be harvested). The intention of the SSFP was to ensure that fishing communities were allocated a "basket of resources" that would provide a source of food and generate an income that would contribute to a sustainable livelihood. There are also NGOs that play a role in supporting the community claim their rights to marine resources and provide training and technical support to improve livelihood outcomes. Examples of some of the main institutions in this study include, the Department of Environment, Forestry and Fisheries (DEFF), Overberg District Municipality (ODM), Overstrand local Municipality (OLM), and

[1] A person of mixed Caucasian ("white") and African ("black") ancestry was labelled as coloured by the SA government during the apartheid era.

the non-governmental organisations Masifundise Development Trust (MDT) and ABALOBI ICT4Fisheries NPO.

The Buffeljagsbaai coastal zone is rich in abalone and this resource has been harvested by the community since the 1930's. However, with increasing restrictions on abalone harvesting due to its vulnerable status and reduced quota allocations, coupled with increased value of the resource, illegal harvesting of abalone has grown tremendously (Raemaekers et al., 2011). The influx of men from outside the community (mainly the Eastern Cape) has increased in recent years and members of the Buffeljagsbaai community estimated that there are 29 groups which enter the community to harvest abalone (Aziz, 2017). The members of the community refer to these groups as "poaching gangs". A small minority of community members are involved in working with these gangs and this has caused friction, distrust and division in the community.

In 2006, the women of this community took the initiative to start a local Women's Group linked to a community-based fisher organisation known as Coastal Links, to ensure that more members in the community could make a decent living (Biswas, 2012). Women were given workshops on how to make mosaics and fabric paint allowing them to sell their products at markets in Hermanus (81km from the community) and Gansbaai (38km from the community). Women also harvest *Littorina littorea*, a common periwinkle species, locally known as alikreukel, from intertidal zones when the fishers are unable to go out to sea (Environmental Monitoring Group, 2017). This sea snail delicacy provides a living for the community through local dishes and they sell this local seafood product to tourists passing by. However, access to alikreukel is via the recreational permit system which allows collection of sea snails as a source of bait for fishing and a cost of R90. Consequently, for the women to operate within the requirements of the permit they may only harvest four alikreukel per day (Environmental Monitoring Group, 2017). The community harvests beyond what the permit allows as they need the marine resources in order to make a living.

In 2012, DAFF promulgated a SSFP draft that recognizes the rights of the fishers and seeks to protect small fishing communities, like the community of Buffeljagsbaai. However, the policy has not been entirely implemented but, the community of Buffeljagsbaai took the opportunity to adopt the fishing co-operatives structure. The purpose of the community to create a co-op was to help members of the community find employment. A co-operative is an economic entity that allows the community to conduct their fishing-related activities. The co-operative represents the fishing community in Buffeljagsbaai allowing them to participate in decision-making processes regarding fisher management. As previously mentioned, it also creates employment opportunities, and works favourable for fishermen, and creates agreements that are in the best interest of the community (Schults, 2016).

1.5. Structure of the Thesis

The first chapter introduceed this research project and outlines the vulnerabilities of small-scale fisheries in SA to climate and coastal-related risks as well as the role of institutional actors in addressing climate risk in the community. It then outlines the rationale of the research, sets out the objectives of the study and provides a brief overview of the case study site.

The second chapter provides a review of the literature related to coastal risks faced by small-scale fishing communities. Key concepts, frameworks and theoretical ideas relevant to understanding the role of institutional actors in the context of communities at risk from climate change are explored as well as perceptions of risk. The review also provides an overview of marine systems of the Benguela system and unpacks the history of small-scale fishing communities in SA as well as fishers' rights pre- and post-apartheid.

The third chapter outlines the research approach and methods employed in this study. The research limitations as well as the ethical considerations informing this study are included in this chapter.

The fourth chapter presents the findings of the research project based on semi-structured interviews, community focus groups, participant observation and a review of government and non-governmental documents.

The fifth chapter analyses and discusses key findings from the research project.

The sixth chapter revisits the key findings of the research project and provides main conclusions and recommendations in response to dealing with coastal-related risks from a holistic perspective.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

One of the key purposes of this study is to enhance understanding about the role of institutions in responding to communities at risk from climate change and assessing whether their policies and approaches enhance or hinder communities' ability to adapt to climate change. This chapter draws on a broad body of literature relating to coastal risks and vulnerability in the context of small- scale fishing communities, climate change adaptation, as well institutional theory. The Chapter begins with an overview of small- scale fishing communities in South Africa and marine environments on the South Coast of South Africa and unpacks livelihoods strategies. The chapter then discusses climate change and marine environments on the South coast of South Africa; Vulnerability and adaptation in the context of coastal risks and the perception of coastal risks. The last section of this chapter gives an overview of institutions and limited statehood in the context of small- scale fishing communities.

2.2. Small- Scale Fishing Communities in South Africa

South Africa's (SA) coastal and marine environment is a highly diverse and productive system that provides food, employment and livelihoods to coastal communities. South Africa's coastline stretches for more 3000km extending from Alexandra Bay on the north west coast to Kosi Bay on the east coast of Africa. It is bordered by the cold-nutrient rich waters of the Benguela current on the west coast and the warm nutrient poor waters of the Agulhas current on the east coast (Tim et al., 2018). Coastal communities have a long history and relationship with the coastal environment. These coasts have been and remain an important source of food and livelihood for many communities and are of immense cultural value to them (Sunde et al., 2013). These communities involved in harvesting resources from the sea are known as small-scale fishers (DAFF, 2012). They are also referred to as artisanal and subsistence fisheries in various parts of the world (Hauck et al., 2002). Small- scale fisheries (SSF) are characterised by small fishing vessels, low technology equipment, their catch distribution is limited to households and they largely sell to local markets (Sowman et al., 2014; Salas et al., 2007; Sowman, 2006; Clark et al., 2002). Small-scale fisheries play a vital role in coastal communities as they provide a living for the majority of community members (Sowman et al., 2014; Stratoudakis et al., 2016). Fishing is more than an occupation for these communities, it is a way of life that cultivates a community that supports one another. Small-scale fishing communities are often subjected to high levels of poverty, food insecurity and unemployment (Loring PA et al., 2019 ; Clark et al., 2002). The importance of fish to food security is most prominent in small- scale fishing communities. In remote areas like North America or Arctic, 80% of people's protein comes from subsistence fisheries, therefore contributes to food security. The SSF are an important access point to a protein source for the global population. In Africa, 85% of fish harvesters are from small-scale fishing communities and contribute to 47% of landed value. Small- scale fisheries provide over 120 million jobs in developing countries. However, they are still considered the poorest of the poor with high levels of unemployment and poverty. This is caused by the misunderstanding of food security. Food

security takes on a more complicated meaning with multiple factors such as climate change, income, socioeconomics and community infrastructure which determines whether or not a community is able to provide for their household. A few things need to be looked at when addressing food security such as, whether or not sufficient food is being harvested, access to affordable food that is healthy, the recognition that these features can fluctuate over time (Loring PA et al., 2019). In most cases SSF experience the negative end of these features which is their main cause of poverty. Furthermore, poverty and food insecurity are not only a consequence of overexploitation but other factors such as geographical and political isolation (Loring PA et al., 2019).

According to a study done by Clark et al. (2002), 147 fishing communities were identified along the coast of SA with an estimated 30 000 subsistence fishers and approximately 28 000 household's dependents on marine resource for food and livelihoods. Despite the major role SSFs has played in rural coastal livelihoods, this sector has been neglected by Department of Environment, Forestry and Fisheries (DEFF) policies, and their importance to food security and poverty alleviation has been underestimated.

The beginning of democracy in SA in 1994 witnessed a massive law transformation process to address the past injustices experienced by marginalised communities, with a focus on providing a platform for these communities to be heard (Sowman et al., 2014). This transformation was guided by the South African Constitution (RSA, 1996), which was founded on human rights principles contained in the Bill of Rights (Isaacs and Witbooi, 2019; Sowman, 2006). Marginalised communities had been systematically excluded from the fisheries sector following decades of industrialisation, industrialised racism and privatisation of marine resources using quotas (Isaacs 2011, Bavinck et al., 2014). The ANC- led government faced a huge challenge in restructuring the industry where the majority of ownership rights were vested in a handful of white- owned fisheries companies, since previous eras (van Sittert et al., 2006). The law transformation process in SA was complex because the adoption of the ANC's macro neoliberal economic policy[2], had to be integrated with the Reconstruction and Development Programme and commitments to a social reformists agenda. Poor coastal communities had high hopes that the government would deliver on their promise "*to facilitate the upliftment of impoverished coastal communities through access to marine resources*" (Sowman et al., 2014; Isaacs, 2011; Sowman 2006). There were expectations for the improvement of resource management, asserting that marine resources should be managed for the benefit of all South Africans, especially communities whose livelihoods depended on marine resources, with the goal of fisheries resources contributing towards poverty alleviation and job creation to poor coastal communities.

Despite the promulgation of the Constitution, the traditional small-scale fisheries sector in SA continued to be marginalised (Sowman et al., 2014). Decisions regarding the rights of access and use of marine resources remained centralised and in favour of the commercial fishing sector (Sowman et al., 2014). Consequently, the then Department of Environmental Affairs

[2] "*Neoliberalism is a policy model that encompasses both politics and economics and seeks to transfer the control of economic factors from the public sector to the private sector. Many neoliberalism policies enhance the workings of free market capitalism and attempt to place limits on government spending, government regulation, and public ownership."(*Kenton, 2020)

and Tourism (DEAT)[3] failure to recognise and cater for the needs of SSF led to fishers from the Western Cape taking things into their own hands by taking legal action. The legal issues brought to surface by the group of fishermen, supported by non-governmental organisations (NGO) including the likes of Masifundise Development Trust and the Legal Resources Centre, were driven by an underlying argument that the government's failure to recognise and implement appropriate fishing rights violated their fundamental Constitutional rights (Sowman et al., 2014; Isaacs, 2011). The legal proceedings forced recognition from the government that small-scale fishers had indeed been overlooked in the new fishers' law reform process. As a result, a new policy was developed between 2009 and 2012 that addressed the needs of fishing communities. In the meantime, while the policy was being developed the Judge ordered the government to provide Interim Relief (IR) to local fishers until the policy was finalised. The IR was instituted by the Directorate: Marine and Coastal Management (MCM) within DEAT. The implementation of the IR was a challenging and profound process because at the time the MCM had limited human resources and administrative systems as well as having no prior relationships with coastal communities to implement the IR (Sowman et al., 2014; Isaacs, 2011). Although IR provided much relief for fishing communities, the implementation process has been criticised for not reaching many poor traditional fishing communities and favouring certain communities over others creating conflict within and across communities (Sowman et al., 2014). In addition, the IR was initially limited to the Western Cape Province, thus leaving communities in other provinces marginalised. The IR process also led to legal action since the industry challenged government's allocation of the IR to small-scale fishers arguing that this threatened the viability of the large- scale commercial west coast rock lobster industry, and that this increased number of people in the fishery would undermine the sustainability of the industry. However, the industry was unsuccessful with their legal proceeding against allocations given to small-scale fishers (Sowman et al., 2014).

The process, which included formulating the draft policy, was a long and challenging one with many delays and procedural flaws (Sowman et al., 2014). The process was challenging for the following reasons, all perspectives of participants involved had to be considered, the fear of the limited marine resources that are needed to cater to a large population, and lastly, addressing the socio-economic needs of traditional fishing communities. All these factors would entail the redistribution of existing rights. Although the process of formulating the draft policy took many years, it led to a greater understanding of the importance of SSF amongst all participants, which guided decisions in the process. However, there were many issues that needed to be addressed and resolved including issues of what resources would be allocated to the SSFs and what quantity. However, due to the Department of Agriculture Forestry and Fisheries (DAFF), who took over responsibility from DEAT for fisheries management in 2010, a draft policy was submitted in 2011 for public comment and in June 2012 the Small- Scale Fisheries Policy (SSFP) was promulgated (DAFF, 2012).

The promulgation of the new policy was a step in the right direction for SA and led to a much-needed paradigm shift in the governance of SSF. The aim of the SSFP is "*to provide redress and recognition to the rights of SSF communities in SA in order to fulfil the constitutional promise of substantive equality*" (Department of Agriculture Forestry and Fisheries (DAFF),

[3] The Department of Agriculture Forestry and Fisheries is now known as the Department of Environment, Forestry and Fisheries

2012). The realisation of the fundamental human rights in the broadest sense requires shifts in governance of SSF by adopting an integrated developmental approach which recognises the importance of involving all actors in the governance system. According to Sowman (2015), the most critical change from previous policies is that the new SSFP recognises the needs and rights of SSF and affords them respect and legal protection. The new policy defines SSF as "*persons that fish to meet basic livelihood needs or are directly involved in harvesting/processing or marketing of fish, traditionally operate on/near the fishing grounds, predominantly employ traditional low technology or passive fishing gear, usually undertake single day fishing trips and are engaged in the sale or barter or involved in commercial activity*" (Department of Agriculture Forestry and Fisheries (DAFF), 2012). This clarifies that all fishery related activities that are engaged in by SSF communities, be it pre- or post- harvest activities, the majority of which are performed by women, would qualify as small-scale fishing activities. Not only does the SSFP demonstrate an understanding of the complexity of the SSF sector, but it also recognises it as a part of a broader socio-ecological system. Thus, the SSF sector has the potential to contribute to poverty alleviation in various ways. The SSFP recognises that SSFs play a role in food security and sustain livelihoods amongst fishing households. One of the many ways in which the policy will contribute towards poverty alleviation is through support for development of infrastructure, provision for post- harvest activities, education and training. Equipping coastal communities with the necessary tools to improve their socio-economic conditions, livelihoods, health, safety and overall well-being will hopefully allow coastal communities to escape the poverty trap that they are in. Livelihoods are complex and connect to many other aspects of life such as finances, education, wellbeing etc., by providing support and development to improve coastal communities' livelihoods, it will have a positive influence over other aspects of their lives and ultimately increase their quality of life.

2.2.1 Livelihood Strategies

The livelihoods of individuals or community play an enormous role in determining their decisions in life or explaining their current circumstances. Therefore, with the background knowledge of perception, it is possible to understand a community's livelihood and state as well as get their view on maintaining their life. Over the past few decades, the livelihood perspective has become the focal point of rural development discussions. The livelihood perspective gives a holistic understanding of the social context of everyday life and provides a better grasp of the bottom-up spheres of resource management. Today it is used to better understand, and address challenges faced by rural communities which include disaster risks, poverty, vulnerability, and adaptive capacity, food security, and climate mitigation. (King, 2011). There has been much research conducted on livelihoods over the past few decades and thus this perspective has had a major influence in development thinking and policy formulation. However, Scoones (2015) argues that over the past decades, little to no input was generated from rural development practitioners for the development of policies but rather influenced by economists, focusing on models of supply and demand, input and outputs, and disregarding the importance of qualitative aspects of livelihoods. In 1980, more research was centred around rural areas, and realised of rural households and farming systems in development research as well as providing a systematic approach to agriculture by understanding the ecology, social,

and economics of agriculture (Scoones, 2015; Morse and McNamara, 2013). Increasingly research on farming systems and the effects of climate change on livelihoods was encouraged to promote a more integrated and collaborative approach to the fields of development, environment, livelihoods security, and adaptation (Scoones, 2015; Morse and McNamara, 2013). The effects of environmental changes on poverty reduction and development led to the movement for environment and development in the 1980s. This movement introduced the term sustainability and became an important policy concern following the Earth summit in 1992 (Scoones, 2015; Morse and McNamara, 2013).

A livelihood comprises the capabilities, assets, and activities required for a means of living. Sustainable livelihood is defined when it can cope and recover from stresses or shocks (droughts, floods, biota, and diseases) as well as maintaining or enhancing its current capabilities and assets and into the future without degrading the integrity of the resources (Morse and McNamara, 2013) . This approach is increasingly being used today to achieve a better understanding of natural resource management. It seeks to improve rural development policies and practises by recognising the complexity of livelihood strategies. The livelihood approach partially originated from literature concerned with understanding the differential capability of rural families to cope with shock and stress events as well as focusing on how assets of rural families can play a role in their ability to cope with and adapt to these events (Allison and Ellis, 2001). These approaches have been applied to rural regions in developing countries where the majority of the poor earn their livelihoods (Morse and McNamara, 2013). Rural regions are vulnerable because of their high exposure to risks and the ongoing struggle for food security (Scoones, 2015; Alemu, 2012; Allison and Ellis, 2001). External factors such as climate change, disasters, food stores, and support from community institutions and government policies, can negatively or positively affect the vulnerability of a community. The constant changing of external factors and socio-ecological conditions will have a significant impact on the livelihoods of communities. Furthermore, the SLA provides a lens to the complexities of livelihood strategies and a guide to address poverty reduction.

The SLA framework recognizes five main asset categories consisting of physical capital, natural capital, human capital, financial capital, and social capital (Allison and Ellis, 2001; Allison and Horemans, 2006; Scoones, 2015). This framework ties in together the different components and demonstrates the relationship between each of them. The SLA framework outlines important aspects but does not necessarily indicate how to investigate livelihoods. According to Morse and McNamara (2013), there are two ways in which institutions can use the SLA framework to examine livelihoods. Firstly, it can be used for analysis, or secondly, it can be applied to aid with the preparation of projects and programs. For example, a study conducted by Bennett et al (2018) used the SLA framework to examine the relationship between indigenous people and fisheries resource management. In contrast, Allison and Horemans (2006) used the SLA to identify how fisheries policies could aid with poverty reduction initiatives without increasing pressure on marine resources. The underlying idea of applying the SLA in a particular context is to better understand the context and factors affecting livelihood outcomes with a view to reduce poverty, vulnerability and improve food security of communities.

Understanding and responding to the complexity of people's livelihood context requires a broad multidisciplinary approach such as the SLA. The SLA is underpinned by a core set of principles:

1. Its centres analysis on people's social and economic activities with the attempt to reduce unsustainable pressure on resources in conjunction with having a better understanding of people.
2. Deriving management and development plans that are not only multi-disciplinary but also transcend sectoral boundaries.
3. Encourages consideration of the different linkages between local levels, meso-level processes as well as wider processes like policies.
4. Promotes participation and transparency when addressing management priorities and promotes dynamic and adaptive learning approach to management.
5. Builds on the existing strengths of a situation by encouraging ways to tackle problems within the capability of individuals/community.

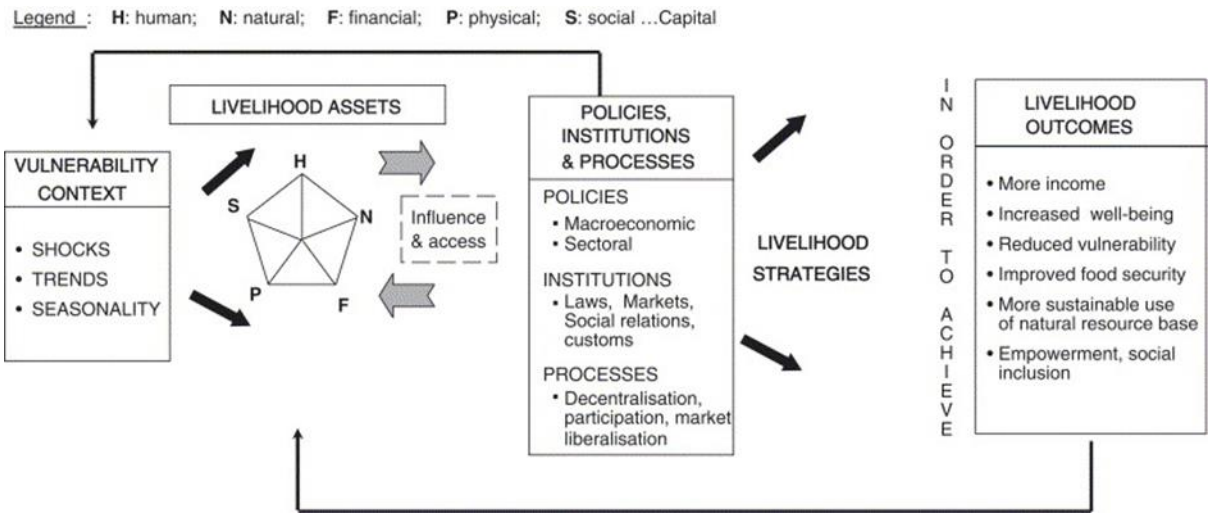


Figure 4: Sustainable livelihood Approach Framework (Morse and McNamara, 2013)

Livelihood strategies are defined as the diverse activities to improve the standard of living of an individual or community. The diversification of livelihood strategies are important for coastal livelihoods in developing countries. For instance, fishing communities have to manoeuvre around the unpredictable seasonal and cyclical fluctuations in stock size and location, thus making it a high-risk occupation. Households that engage in a diversity of livelihood strategies reduce the risks of livelihood failure, as well as the vulnerabilities caused by fish stock uncertainties and can generate an income to keep the community afloat (Allison et al., 2012; Allison and Ellis 2001; Allison and Horemans, 2006; Alemu, 2012).

Aside from the unpredictability of the ocean, other factors would encourage a community to have diversified livelihoods such as overexploitation policies relating to marine resources, low-grade fishing gear, and climate change. Alemu (2012) explains two reasons for diversification of livelihood; for a household to stabilize their income by diversifying into other activities that are not vulnerable to climatic and price variation and for a household to engage in activities that are complementary to their primary source of income, for example, the integration of agriculture and livestock activities.

There numerous factors that could potentially affect the choice of livelihood strategies, these include gender, education, social infrastructure, and household structure. In the case of gender, women are involved in activities that are less profitable than men in their community (Alemu, 2012). It is important to note that although diversifying livelihood strategies increases a household's resilience to shock events or climate change induced events, it does not necessarily mean that all households will have the same experience. In some households, members may intensify their livelihood strategies while in others, members may diversify or combine strategies that best enable adaptation to adversity (Paavola, 2008). In addition, local livelihood strategies are constrained and facilitated by the local economy and society it is surrounded by. For example, an economy that is more complex offers more diversification opportunities than that of a simple economy (Paavola, 2008).

For this research project, livelihoods and the SLA will be used as a lens to understand the complexity of livelihoods and the role of institutional actors in a coastal community, specifically addressing their role in aiding the community to climate and coastal- related risks and the impacts of these risks to their livelihoods and how that unfolds in their household.

2.3. Climate change and Marine environments on the South coast of South Africa

Climate change poses significant challenges for development, especially for developing countries and vulnerable communities. It has become an urgent matter in all sectors of government as well as private companies and can no longer be ignored. Climate change has demanded attention for many years, but it has only been recently included in future development programs, laws and policies. The global average temperature is projected to increase by 0.2 degrees per decade for the next two decades which will cause major changes in both oceanic and freshwater environments (Ziervogel et al., 2014; Mcllgorm et al., 2010).

The ocean plays a vital role in regulating global temperature, climate as well as atmospheric gas concentration. It also provides habitats to an array of organisms and ecosystems that provide goods and services worth trillions each year (IPCC, 2018). Climate change threatens an increasing number of oceanic ecosystems and coastal communities that livelihoods depend on marine resources. According to the FAO (2016), global fisheries and aquaculture contribute an annual total of 88.6 and 59.8 million tons of fish. Global fisheries play a critical role in the food security of many countries. The acceleration of climate change coupled with other stresses (e.g. pollution, overfishing, and unsustainable coastal development), are affecting small- scale fisheries'(SSF) sustainability to the point where they are unable to maintain reliance on marine resources as a source of food (Pendleton et al., 2016; McClanahan et al., 2009; Cheung et al., 2010; McClanahan et al., 2009). The increase in frequency and intensity of extreme weather conditions, sea- level rise (SLR), and degradation of coastal ecosystems are some of the effects of climate change that are putting coastal communities at risk (Bennett et al., 2015). Subsequently, increased ocean temperatures will affect primary and secondary productivity cycles which will then affect the structure of marine ecosystems. It will also affect the stratification of the water column, and changes in timing and intensity of upwelling systems (Constable et al., 2014). Changes in oceanic processes and properties will affect fish migration, distribution, recruitment, growth, abundance, and predator-prey relationships. Subsequently,

impacting the livelihoods and well-being of coastal communities (Blanchard et al., 2012; Mcllgorm et al., 2010).

The impacts of climate change in Africa have been recognised as a significant factor affecting socio-economic development and livelihoods, especially because of the links between climate change, food security, poverty alleviation and sustainable development (Bunce et al., 2010; FAO, 2013). Climate change brings about both positive and negative impacts on different users of the land and coastal areas, but it also introduces new and unfamiliar conditions where resource users must adapt to cope with the change. The impacts as well as the interaction of disturbances further contribute towards poverty and increase the sensitivity and vulnerability of a community (Berman et al., 2012; Engle, 2011; Gupta et al., 2010; Osbahr et al., 2008; Gallopin, 2006; Smit and Wandel, 2006). The western region such as Western Cape, of South Africa (SA) is expected to experience large increases in temperature, whereas in the eastern region such as the Limpopo provinces will experience reduction in rainfall becoming drier and exposed to frequent drought (Shepard, 2018). Although climate change will inevitably affect everyone, coastal areas will experience significant impacts arising from storm surges, floods and SLR. In southern Africa, coastal cities with large growing populations (such as Cape Town or Maputo) will be especially affected, and the climate is expected to be more variable and extreme weather events will occur more frequently and be more severe (Bunce et al., 2010).

The Southern coast is situated on the Agulhas bank which is a protrusion of the continental shelf. The Agulhas Bank is bounded in by the cold, nutrient rich Benguela current on the west and the warm, nutrient deficient Agulhas current on the east (Tim et al., 2018). The ecosystems and hydrological conditions are influenced by both the Atlantic and Indian Ocean. The

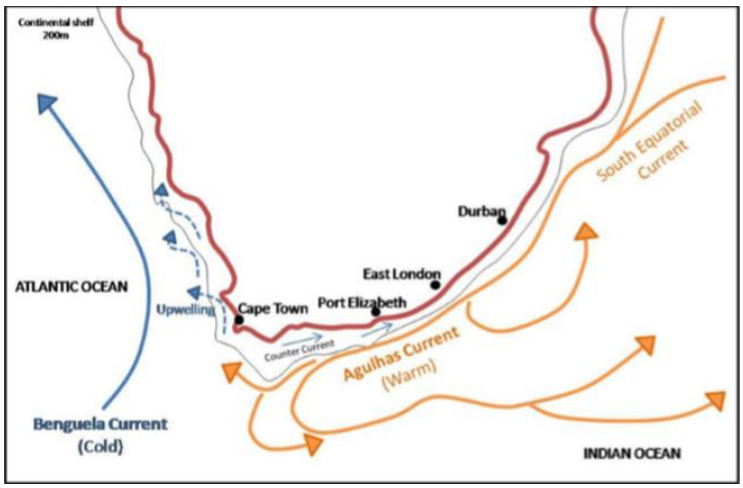
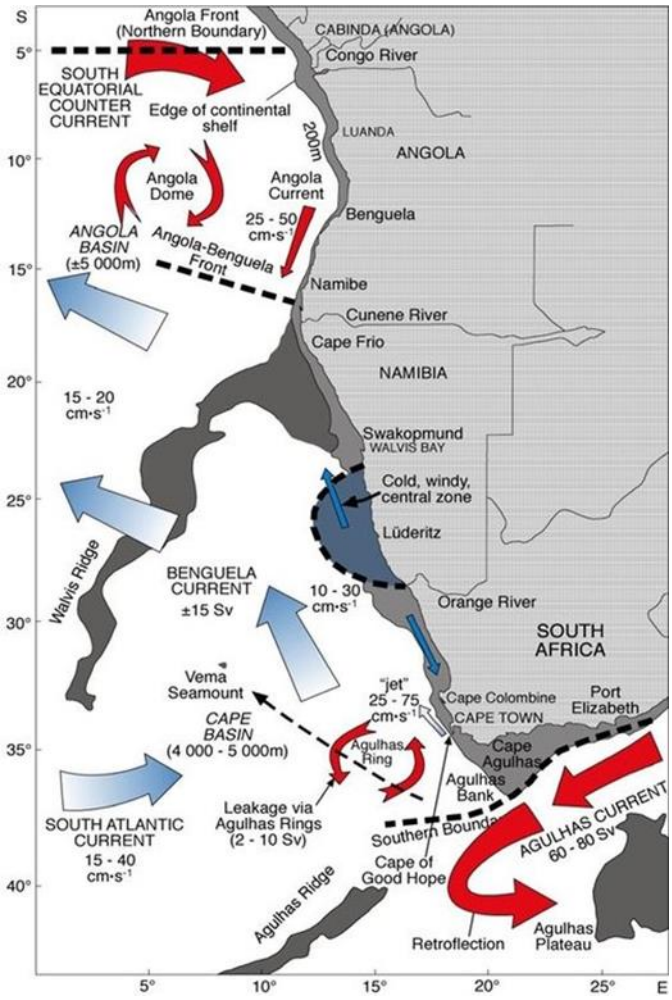


Figure 2: Oceanic currents of Southern Africa (Overberg District Municipality, 2015)

Overberg district is situated where the Indian and Atlantic oceanic systems meet, making it an ecotone. An Ecotone is a region that supports a highly diverse fauna and flora as well as endemic species (Overberg District Municipality, 2015). The Benguela system is situated off the west coast of southern Africa and is divided into two sections, the northern and southern Benguela systems. The northern Benguela System runs along Angola and Namibia and is different to the southern Benguela system that runs along SA in terms of physio-chemical characteristics and biota (Blamey et al., 2015, Sowman and Raemaekers, 2018). The Benguela system is one of the four major eastern boundary upwelling currents that support a wide range of marine life. The cold southern Benguela upwelling system fuels most of SA's major

commercial fisheries and small- scale fisheries (Blamey et al., 2015). However, the Southern Benguela has experienced spatial and temporal changes in key species over the past four decades and has affected SA's fisheries and ecosystems.



<u>Figure 3</u>: A map of the Benguela System (Shannon, L.V., 2003)

A summary of changes in key species in the southern Benguela System (Ortega-Cisneros et al., 2018; Sowman and Raemaekers, 2018; Blamey et al., 2015; Cockcroft et al.,2008; Blamey and Branch, 2012) is provided below:

- **Phytoplankton**. Harmful Algal Blooms becoming more intense and frequent due to increased upwelling and nutrients present in the system.
- **Zooplankton.** Fluctuation in abundance, increased in the 1950's but decreased in the 1980's with a shift to smaller copepods.
- **Small Pelagic Fish.** Alternating dominance of sardine and anchovy and an eastward shift on the west south coast of SA.
- **Line fish.** Declining mainly due to over-fishing
- **West Coast Rock Lobster.** There has been a decline of rock lobster on the west coast due to overfishing, increased events of low oxygen in bottom waters, diminished food supply as well as a shift from the west coast to the south-west coast.

- **Abalone.** There has been a decline in abalone due to overfishing and poaching. Abalone is indirectly affected by the invasion of the rock lobster as their main source of food is the sea urchin which provides the abalone with protection from other predators.
- **Kelp.** The kelp density has increased and is expanding eastwards due to cooling of inshore waters

Spatial changes in key species such as cool water species (kelp and West coast rock lobster) have had an eastward shift and warm water species (brown mussel) experienced retention. This suggests that there is a cooling of inshore waters on the southwest coast. All changes include a temporal decline due to the combination of overfishing and environmental conditions and displayed an eastward shift along the southwest coast.

The movement of marine species is not the only change observed within the South Coast. Changes in chemical properties in the sea as well as atmospheric conditions have been noted including changes in sea surface water temperature, SLR, salinity, pH levels, stronger winds, timing of wind patterns and weather events (Sydeman et al., 2014; Beal et al., 2011; Ray et al., 2010; Clarke, 2006).

2.4. Vulnerability and adaptation in the context of coastal risks

Coastal regions are physically and socio-economically dynamic zones as they are at the interface between the ocean and land (Meur-Férec et al., 2008; Reguero et al., 2014). These regions host several ecosystems and habitats and are home to an array of marine and terrestrial species. Coastal regions have played an important role in the history of human development; initially the coast was only seen as a source of food and resources but increasingly it became a pathway of movement along the coast and between other coastal regions (Bailey, 2004; Evans, 2008). Coastal regions hold a large percentage of the global population and many major cities are situated on the coast, e.g. Tokyo, Mumbai, New York City, Shanghai, Los Angeles. Although access to the coast and its resources has improved livelihood security and resource security for many people; there has been a disproportionate impact on the coasts from human activities and development pressures. Increasing unsustainable development activities and construction of infrastructure have left large coastal regions polluted, degraded and even destroyed. Modifications and damage to these complex socio-ecological systems, have resulted in loss of biodiversity and important ecosystem services leading to unpredictable outcomes which are now further exacerbated by climate change. The increase in frequency and intensity of extreme weather conditions, sea level rise (SLR), changes in the ocean's composition is affecting coastal ecosystems and placing coastal communities at risk.

According to the AR5 IPCC (2014) risk refers to *"the potential for consequences when something of value is at stake and the outcome is uncertain, recognizing the diversity of value*". This suggests that risk may be characterized and perceived differently by people depending on their values and current situation. Cardona (2004) explains risk as the possibility that an undesirable outcome with adverse effects will occur due to natural events or human actions

especially in vulnerable socio-ecological systems. Risk, which is a function of a hazard, is defined in terms of its outcome.

Risk, in the context of climate change impacts, results from the interaction of three factors, hazards, exposure and vulnerability. It is important to note that all these three concepts including risk are subjective and are influenced by a number of factors (Carlton and Jacobson, 2013). Hazards can be described as the possibility of a natural or human induced physical phenomenon that may cause damage and loss to property, infrastructures, livelihoods, health, environmental resources or an event triggered by climate change e.g. flooding from SLR (Satta et al., 2017; IPCC AR5, 2014; Meur-Férec et al., 2008). Exposure is described as "*the presence of people, livelihoods, species or ecosystems, environmental functions, services and resources, infrastructures, or economic, social or cultural assets in places and settings that could be adversely affected*" (IPCC AR5, 2014).

Climate change may provoke a number of changes on the coast including accelerated SLR and will cause tidal inundation, increased flood frequency, accelerated erosion, rising water tables, and a range of ecological changes (Reguero et al., 2014; Carlton and Jacobson, 2013; Church and White, 2008). The biophysical changes of coasts will directly cause socio- economic impacts such as loss of infrastructures, resources and affect people's wellbeing (Satta et al., 2017; Dolan and Walker, 2006). Coastal risks such as flooding and extreme weather events can impact on the physical capital and productive assets of communities and households which could lead to a decrease in harvest capacity and disruption of services and infrastructures that support livelihoods and destroy landing, boats and gear for fishing (Badjeck et al., 2009). Studies done on extreme climate conditions have shown that these extreme conditions have the potential to have long lasting impacts on communities and the environment (Marshall et al., 2013). Sea level rise (SLR) amplifies the impacts of storms and wave action which is visible as the damages from storm surges have already penetrated farther inland than fifty years ago, thus changing conditions for coastal ecosystems and people living on the coast (Marshall et al., 2013).

It is important to note that these changes are scale dependent and consequently unevenly distributed among and within communities and regions resulting in differential exposures and vulnerability (Carlton and Jacobson, 2013). No two coastal communities are the same and experience different challenges and risks therefore it is important to understand the vulnerability context of people in the community and what makes their community vulnerable as well as their perceptions about factors contributing to their vulnerability.

One of the most vulnerable groups to climate-related risks in South Africa are the small- scale fisheries (SSF) sector (Sowman and Raemaekers, 2018). Climate change may not only alter the biophysical environment but also the socioeconomic environment, thus increasing vulnerability of small-scale fishing communities. Small-scale fishing communities contribute the least towards climate change but are the most vulnerable to its impacts. Fishing communities are unable to adapt to the rising frequency and severity of extreme weather events. Bunce et al. (2009) states that Africa's elevated poverty has caused it to rank highly in terms of vulnerability to climate change. The changes in storm direction coupled with the force of

wind and waves associated with large storms will increase physical damage to coastal risks. In order to address the vulnerability in the context of climate change and coastal risks, it is important to first understand vulnerability, and unpack its constitutes.

Vulnerability has become a popular concept discussed across all literature and provides critical insight in developing policies, law and different strategies. Vulnerability is defined as the degree to which a system is susceptible to risks, and its inability to cope with disturbances (Shah et al., 2013; Cinner et al., 2012; Berman et al., 2012; Engle, 2011; Gupta et al., 2010; Gallopin, 2006; Smit and Wandel, 2006) In the case of this study, "*Vulnerability is referred to the predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm or lack of capacity to cope and adapt*" (IPCC, 2014). Furthermore, vulnerability consists of three broad components which addresses the dynamic and integrated nature of social and environmental vulnerability based on climate change and natural hazards research (Dolan and Walker, 2006). The three main components are as follows: exposure, sensitivity and adaptive capacity, and their determinants are dynamic and differ by place, system and type and are affected by their social, economic, political ecological conditions (Smit and Wandel, 2006). Vulnerability is related to the different stimuli of exposure and sensitivity such as climate change, as well as the adaptive capacity of a community to cope with the various risks associated with exposure. Exposure and sensitivity are inseparable components of vulnerability and depend on the interaction of the different aspects of the system and the climatic conditions. For example, the exposure and sensitivity of a community to flood or storm surge reflect the livelihood of the community as well as the characteristics of their livelihoods which influences its sensitivity to such an exposure (Smit and Wandel, 2006).

Exposure refers to the degree to which stress was applied to the system, this can be long term changes in climate or changes in climate variability (Marshall et al., 2013; Mumby et al., 2014; Shah et al., 2013; Tuler et al., 2008; Dolan and Walker, 2006). In the case of coastal communities and SSF, exposure can refer to the implementation of a new regulations, rough weather conditions, collapse of fishing stock, flooding etc. Sensitivity refers to the degree to which the system will respond to the impacts (Mumby et al., 2014; Marshall et al., 2013; Shah et al., 2013; Tuler et al., 2008; Dolan and Walker, 2006). Sensitivity is derived from features of the community and the environment; whereby various features of the community can influence their sensitivity. Sensitivity is also related to the community's relationship with one another, access to resources, social support and institutions as well as their biophysical environment (e.g. location, weather conditions, soil, marine systems). Adaptive capacity refers to the system's ability to adjust or cope with the impacts of the stressor (Mumby et al., 2014; Marshall et al., 2013; Shah et al., 2013). It is the community's or household's ability to adjust to the exposure (flooding, rough sea conditions etc.), moderate the potential damage and take advantage of opportunities to reduce the impacts of future events that influences their vulnerability. However, adaptive capacity is an attribute of the community or household that exist prior to the exposure and therefore historical conditions play a significant role in determining a systems sensitivity and ability to adapt to stressors. The concepts of vulnerability and adaptation are interrelated, and both significant when looking at climate change and risks

related to it. The definition of adaptation in context at a local level is the adjustment in communities and institutional actors' behaviours to reduce the vulnerabilities to climate change (Smit and Wandel, 2006). For instance, if a small fishing community were to adopt a new and improved methods such as poaching or expanding their livelihoods to other marine species to cope with changes in the environment or changes in "internal stimuli" i.e. demography, economic or social. Furthermore, communities that are able to cope with change quickly or easily are considered to have a high adaptive capacity. On a local level, the ability to adapt can be influenced by infrastructure, technology, access to finance and resources, managerial issues and institutional environment. In addition, the adaptive capacity on a local level is heavily influenced by the constraints of political, socio-economic processes on a higher level. There is usually uncertainty around how certain systems will react to a specific change, therefore adaptive capacity is a critical system as it describes how to utilize limited resources to anticipate or respond to change. It is important to note that adaptive capacity is context specific and differs depending on the situation, scale and over time (Abdul Razak and Kruse, 2017; Engle, 2011; Smit and Wandel, 2006). Therefore, it is important to identify the limitations and barriers that affects adaptive capacity of a community and what strengthens it. Normal to slight climatic deviations from the norm are within most communities' capabilities to cope, however exposure to extreme events surpass their threshold to cope and exceed their adaptive capacity.

A household's ability to adapt or cope to climate risks is determined, to an extent by the enabling environment of the community and the adaptive capacity of the community and is also influenced by the resources and services of the area. Unpacking the components of vulnerability provides information about how and what makes a community vulnerable. Understanding these components has the potential to reduce vulnerability through identifying the issue, managing it efficiently and lastly targeting it for intervention (Mumby et al., 2014). Apart from climate change having an influence over the vulnerability of coastal communities in SA; it creates unfamiliar situations where the communities must learn new ways to adapt but it also accelerates other factors that contribute towards vulnerability (Shiferaw et al., 2014; Prelog and Miller, 2013; Adelekan, 2010; Bene, 2009; Glavovic and Boonzaier, 2007). These factors are described below:

1. The legacy of apartheid. The effects of apartheid still linger and pose an enormous challenge to the Government and the people of SA. Coastal communities do not have access to resources or opportunities the coast can offer. Many coastal communities still do not have adequate access to basic services and are exposed to these extreme weather conditions.
2. Health Care. The poor are prone to ill health and various medical conditions due to poor nutrition and often due to harsh working environments. Many lack access to quality health care as well as money to pay for medication thus making them vulnerable.
3. Lack of infrastructure: low-income or poor communities do not have the adequate infrastructure to withstand extreme weather conditions.
4. Reliance on natural resources. Communities reliant on natural resources as a livelihood are more vulnerable to certain risks. For example, changes in species distribution of fish will affect fishers catches or increase drought affects a farmers' crops.

5. Corruption and illegal activities. These acts have direct and indirect impacts on livelihood prospects (reduces private investment in the area, reduces tourism, - negatively affects the resources and jeopardizes the safety of the community). For example, abuse of power by authority actors or organized crime.
6. Increasing interest in coastal areas. Much of the coastal areas are now subject to immense pressure for high-end development that will have an impact on the livelihoods of coastal communities by restricting access to natural resources. For example, mining on the west and east coasts of SA as well as Operation Phakisa which focuses on growing SA's blue economy through expanding harbors, shipping and aquaculture.
7. Poor communities situated in or adjacent to coastal and estuarine environments. Climate change will cause medium to long term impacts on these communities such as flooding.

All factors above coupled with climate change accelerate the vulnerability of coastal communities and reduce their adaptive capacity. The interaction between the stressor or risk and impacts can have unexpected outcomes on the livelihoods and wellbeing of coastal communities (IPCC, 2014). The interactions may not be visible and across many scales, leaving the community at risk to one or multiple exposures to the stressors. What this entails is that a community might feel the impact of stressors more than once through different pathways (IPCC, 2014). The starting point for reducing vulnerability is to understand the exposures and sensitivity of a system on all scales and social groups which will subsequently have a positive effect on the adaptive capacity (Bunce et al., 2010).

Unpacking the three components of vulnerability indicates capabilities, assets, and activities required for living sustainably. It provides information on the status of a community's current adaptive capacity and ways to improve it. The knowledge about vulnerability provides the foundation for developing strategies and plans to minimize impacts, assess the risks, identify strategies to improve resilience, evaluate the plan of action and cost effectiveness of it, and lastly to engage and empower the involved institutions in an adaptive process (Marshall et al., 2013). Furthermore, small- scale fishing communities are not equipped or lack the necessary support and their vulnerability to change will increase. Therefore, understanding vulnerability in the context of coastal communities would give insight into understanding the dynamics of the community and what can be done to improve their adaptive capacity.

2.4.1. Perceptions of Coastal Risks

Perceptions can be considered useful to understand when dealing with climate and coastal-related risks because people's understanding of risks and what is a priority may differ due to numerous factors (Lee et al., 2015). Understanding perception involves "*the process of collecting, selecting and interpreting signals about uncertain impacts of events, activities etc*." (Wachinger et al., 2013) This implies that the knowledge obtained is either through direct experience or indirect experience (information from risk witness, media or education). Risk perception can also be explained as the relationship between risk awareness, worry of one's

vulnerability to be harmed and the ability to cope, also known as 'intuitive risk judgement' (Hopkins and Warburto, 2014; Becker et al., 2012).

People's perceptions of risk depend on various factors such as social, psychological, economic, cultural and environmental or any combination of all the factors. In simple terms, the significance of climate-related risks is influenced by an individual's attitude towards the risks that are influenced by sociocultural and political factors (Johannesdottir and Gisldottir, 2010; Capstick et al., 2015). Perceptions may differ depending on the type of risk, the context and the personality of an individual. The judgement of the seriousness of the risk and the ability to acknowledge risks are influenced by knowledge, experience, values, attitudes and emotions; which therefore play a role as to how an individual responds to the risk- taking action to avoid the risk, mitigation strategies, adapt to risks or simply ignore the existence of the risks (Wachinger et al., 2013).

Members of the same community could perceive livelihood risks in different ways since livelihoods are built on multiple factors such as economic conditions, social, cultural, political and environmental factors. For example, in a village in Tanzania, weather and irrigation problems were perceived to be a higher risk to the livelihoods of farmers involved in cultivation than to pastoralists (Bunting et al., 2013).

The level of risk perception can be determined by direct and indirect experiences. Direct exposure to a natural risk such as flooding, allows for the community to experience the threat and demonstrates the potential for future risks. This reinforces precautionary behavior and increases risk perception. However, the exposure to risks that are rarely experienced, could produce a false sense security and lead to misjudgment of the ability to cope (Wachinger et al., 2013). In other cases, being exposed to risks but not experiencing any damage or harm, may create a sense of false security as people may believe that an event in the future will not affect them and thus decreases their risk perception. Indirect experience refers to education, media and stories from people who have experienced the risk. The different platforms of social media illustrate the threat of risks differently which correspond to how people react to risks. Mass media, in a way shapes the perception of risk to some degree. The media can trigger an individual's memory of a previous experience of risk. Indirect experience can play a role in recalling personal experiences to help motivate themselves and others to take protection against the risks (Becker et al., 2012). Emotions linked to past risk perceptions are important and can be recalled through communication whereby people who did not experience the risk can empathize with such stories (Wachinger et al., 2013; Becker et al., 2012).

Perceptions influence an individual´s decision whether or not to act and what adaptive measures will be taken over the short and long term (Hopkins and Warburton, 2014). The adaptive capacity for dealing with a specific risk depends on how well the risk is understood, the ability to respond and the perception of how the risk may impact an individual's household and livelihood (Bunting et al 2013). Access to education is seen as an indirect experience as students become more knowledgeable about risks and are taught the necessary precautions and actions to take when an event occurs thus increasing their risk perception. Furthermore, societies that do not have access to any type of education have a lower risk perception. These societies are usually low-income residents in rural areas or secluded on a farm (Lee et al., 2015). Therefore, primary and secondary education plays an important role in establishing a base of risk perception. On the other hand, many rural communities are more knowledgeable

about the surrounding environment through observation, experience and passed down knowledge and are therefore able to mitigate or adapt to risks. Having a better understanding of local knowledge and coping strategies are needed to create successful adaptation and mitigation measures (Alam et al., 2017; Haque et al., 2015).

2.5. Institutions and Institutional Arrangements

Institutions refer to social arrangements, norms, set of rules that shape and control human behaviour and have a degree of permanency in individuals lives and intentions (Merrey and Cook; Cleaver, 2017; Merrey and Cook, 2012; Gupta et al., 2010). An alternative view on institutions is that they are a system of rules and can be further characterised into three intertwined dimensions. The first general characteristic is regulative which refers to regulatory processes involving monitoring, sanctioning, and setting out rules. This characteristic is usually associated with governmental institutions. The second dimension is normative which refers to moral judgement about how things should be done. Lastly, the third dimension is a mental shift which encompasses the shared views and frames creating the sense of meaning towards things (Weber de Morais et al., 2015). One of the objectives of this research study is "to *reflect on relationships and dynamic between the community and with organisation and institutions with some responsibility or interest in the affairs of the Buffeljagsbaai community*", therefore in this research project, intuitions will be broken down into three categories, government institutions, private institutions and non- governmental organisations (NGOs). Although one cannot explore institutions without considering their role in governance and the linkages between institutions and governance, the focus of this study is on the role of institutions in assisting coastal communities adapt to coastal and climate-related risks.

The Sustainable Livelihood Approach (SLA) places institutions at the centre of its framework and highlights the importance of their role in enabling livelihoods. The approach has been applied to development programs and resource management to reduce poverty and minimize vulnerabilities in small-scale fishing communities. It helps understand and analyse the conditions and processes shaping livelihoods as well as contribute to the development of policies and improve systems that improve the contribution of small- scale fisheries (SSF) to food security. Furthermore, reducing poverty and improving the livelihoods of people whose livelihoods are dependent on marine resources. Scoones (2015) emphasizes the importance of institutions and organizations in the SLA and as it is represented in the centre of the framework where it influences the factors that shape livelihood strategies. In the context of policies and institutions, the assets and activities of the framework can either enhance or hinder livelihood strategies (Morse and McNamara, 2013Allison et al., 2012; Allison and Horemans, 2006; Allison and Ellis, 2001). Furthermore, the power given to institutions are thought to shape societies behaviour with regards to natural resource use (Cleaver, 2000). Institutions are involved in activities (e.g. issuing permits, making laws and policies or restricting access) that mediate the access to resources on the coast and directly affect the livelihoods of coastal communities. What seems to be a recurring problem of institutions at all scales, is that their roles and responsibilities are poorly defined. In the context of coastal and fisheries management, it is difficult to determine which institutions have jurisdiction over what activities in coastal regions (Glavovic and Boonzair, 2007). Fishing communities often share the coastal

region with other resource users and private sector actors who have different interests and needs. They are vulnerable because of their weak socio- economic status, high levels of dependence on the resource and exposure to risks associated with climate change.

Fishing communities are sensitive to risks and some capitals may be more vulnerable than others to certain shocks or stressors. Institutions can act and limit or manage the damage which may occur from risks or stressors. They have an influence on access to different forms of capital and can facilitate or hinder people's opportunities and choices of livelihoods. As mentioned above, institutions influence the lives of people and are constructed through gathering, applying analogies and ideologies that are already present in existing institutions; this process is known as bricolage (Cleaver, 2002). Institutional bricolage creates arrangements that can accommodate multiple goals, embedded in networks of social relations, norms, and practices, and to maintain social consensus. The concept of Bricolage explains that the tools used in creating resource management and action are often constructed from existing institutions. This allows for a transdisciplinary integration of knowledge, experience, and the ability to examine the dynamic nature of resource management. It further explains how this may help understand the complex relationship between and amongst institutions and livelihood strategies (Cleaver, 2002).

Institutions and other actors have cross-scale interactions which are common when dealing with global phenomena such as climate change, adaptation and responses to global economic flows (Osbahr et al., 2008). One of many responsibilities of institutions is facilitating adaptation across multi-levels, for example, from the fisher to the local authority to public agencies. Through identifying the various institutions that are responsible for resource management and protection against risks in a community at the different levels of governance, it is possible to see how livelihoods are enabled or hindered by various institutions in the context of risks. Bunce et al (2010) states that in some cases, national and regional development programs may not take local impacts and vulnerabilities into account as well as impacts of climate change on coastal communities. With both climate change and coastal communities being side-lined, institutions or interventions have the power to undermine the resilience of poor communities to cope with and adapt to climate change. A more transformative adaptive strategy is needed to respond to communities at risk which protects their livelihoods, reduces vulnerability and strengthens their resilience to risk events (Osbahr et al., 2008). Moreover, excluding diversification of livelihoods, access to resources and adaptation to climate change goes against the core principles of sustainable development and further contributes towards poverty (Smucker et al., 2014). Institutions have immense power over the livelihoods of people and have the potential to uplift a community from the poverty trap.

In the context of coastal and climate-related risks, institutions can influence the livelihoods as well as coping mechanisms of vulnerable communities. Institutions structure the distribution of climate-related risks and impacts, meaning institutions give their assistance where they deem fit, to reduce impacts experienced by a community or simply let the community develop their own ways of dealing with impacts of climate-related risks. Institutions create incentive structures for households and coping mechanisms. This encourages communities or individuals to act in a certain manner that determines how institutions will respond or the level of assistance they will provide in other words a specific behaviour will result in benefits or drawbacks (Agrawal and Perrin, 2009; Agrawal, 2008). Institutions are mediators between external interventions and communities, which could have a negative or positive affect on a

community's ability to adapt to risks. For example, it can take shape in the form of finances, knowledge and information, skills training, new institutional inputs, and technological support and can assume many different forms (Agrawal and Perrin, 2009; Agrawal, 2008).

However, Glavovic and Boonzair (2007; p5-7) drawing on research conducted in South Africa (SA), state that although institutions have the capability to promote sustainable livelihoods, the majority hinder the promotion of sustainable livelihoods in the following ways:

Lack of Information: Few institutions know the difference between coastal and inland areas, do not know the vulnerabilities of communities to climate change within their municipality and do not have the necessary information for decision-making about a community.

Resource constraints: Responsibility of provincial and local government has increased over coastal areas which include a range of economic development and planning responsibilities. These increased responsibilities do not necessarily mean that the knowledge of sustainable livelihoods is enough but rather inadequate, resulting in ineffective planning strategies. Due to the increase of responsibility, local institutions such as municipalities do not have the financial means to provide sufficiently for their district.

Institutional limitations: The inability of institutions to adapt to climate change. Local institutions use policy frameworks that are largely composed by higher levels of governmental institutions which puts local institutions at a disadvantage. In some cases, policies, laws and procedures often conflict, overlap or are outdated which in turn creates uncertainty about who has responsibility over what coastal areas. Another problem is translating good intentioned policies into tangible results on the ground. There is a gap between the intended polices and the process of executing it effectively, this is further exacerbated by the tension between local authorities and traditional leaders. These issues have been highlighted by several other authors (Measham et al., 2011; Agrawal and Perrin, 2009; Agrawal. 2008).

Similarly, Bunce et al (2010) discuss how institutions and policies implemented often do not "fit" the social system and the natural systems because, they neglect recognising the complexity of an ecosystem, it's resilience and irreversibility. Two paths were suggested to overcome these tendencies. In order for both systems to be responsive and compatible it is essential to get the institutions "right" which is a challenging process as there are many concerns that must be taken into account as well as being efficient but also ethically and socially just (Jentoft, 2007). Firstly, moving towards a more novel, reflexive and integrated form of governance and policy making. This would link the local sphere with institutions and parties on a governance scale, which would in turn enable an adaptive co-management strategy, whereby the institutions and relevant actors are actively involved in planning and implementing new policies. Secondly, to overcome misfits in policies and governance, more effort needs to be directed to actively building the adaptive capacity of those who are most vulnerable (Bunce et al., 2010, 2007).

Cleaver (2000) states that institutions are evolving from multiple processes including conscious and unconscious acts and borrowing of acceptable patterns of interactions from social relations rather than being carefully and rationally crafted. Coastal livelihoods are complex and dynamic; no set rules can be applied to all coastal livelihood systems because the same rules that work well in one system are part of a failed systems somewhere else (Ostrom, 2008). Institutions are constantly debating over agreements which often take long periods of time to resolve, resulting in institutions being biased towards previous interactions, views and power

relations. They are to a degree resistant to change thus making the transformation of institutions challenging (Gupta et al., 2010). Therefore, an adaptive and robust approach is required in designing the rules, regulations and legislation of institutions.

2.5.1. Limited Statehood in the context of small- scale fishing communities

Institutions play a significant role in rural communities and have the power to influence the livelihoods of communities as well as their coping mechanisms to coastal risks. Furthermore, the power given to institutions are thought to shape societies behaviour with regards to natural resource use (Cleaver, 2000). Institutions are involved in activities that mediate the access to resources on the coast and directly affect the livelihoods of coastal communities. Therefore, an active presence of government institutions is vital for the progression of a community. However, the majority of small- scale fishing communities do not experience the support of highly invested government institutions and their absence can be seen in those communities. The lack of involvement of government institutions in a particular region is referred to as limited statehood. Limited statehood refers to an area where the country's government lacks the ability to implement and enforce rules, regulations and lacks legitimate control over violent activities (Risse and Eric, 2018; Kraser and Risse, 2014). According to Schmelzle and Stollenwerk, (2018), since the early 1990's, most countries' government institutions or state actors have displayed an inability to create public goods and basic social order which has become an issue of international politics. According to Krasner and Risse (2014) *"If we define statehood in terms of the public goods and services consolidated states are supposed to provide, we can no longer distinguish between state capacity and the provision of services".* This means that the degree of statehood is measured by the level of provision of public goods and services. At the one end of the spectrum is consolidated statehood which refers to the state possessing the monopoly force and the capacity to implement decisions (Polese and Hanau Santini, 2018). On the other end of consolidated statehood is limited statehood which refers to the lack of capacity or willingness to enforce decision and their presence is often absent (Polese and Hanau Santini, 2018; Schmelzle and Stollenwerk, 2018). For instance, small- scale fishing communities are often isolated from the nearest town and would have to travel far distances for groceries, schools, medical care and seldom are these basic service deliveries available in the community itself. Often rural coastal communities are left behind while other areas are in the process of economic development, therefore more attention is focused on areas on a similar economic level (Pomeroy et al., 2006). Sadly, rural coastal communities are marginalized and their risks are not seen as a priority. In addition, access to fishing rights and other basic facilities are lacking in the community further rendering vulnerable to climate change and coastal risks. The lack of basic facilities such electricity, water, housing, medical attention and so forth plays a role in their ability to cope with risks and emphasizes marginalization. Systems of allocations do not support local livelihoods, undermines human security and does not produces favorable outcomes between the community and the resources (Bennett et al., 2015). These systems have control of who has access to what resource and they define who, what and how much marine resources are harvested (Bennett et al., 2017).

A number of issues arise in areas of limited statehood such as lack of trust for the State because of the unreliability, fragmentation and violence which initiated dangerous gangs claiming their territory (Risse and Stollenwerk, 2018; Schmelzle and Stollenwerk, 2018). Limited statehood

is seen as failed or fragile states that have lost the state of monopoly and do not have the capacity to enforce decisions. A country on the whole does not necessarily need to be in a state of limited statehood but rather may have certain areas that are. According to Risse and Stollenwerk (2018), more than 70% of the world's countries contain significant areas of limited statehood.

Although limited statehood is usually portrayed in a negative light it does present some opportunities to enable a paradigm shift in how we view the role of institutions and governance. The lack of capacity does not necessarily imply a lack of governance but rather a complex interplay of different institutions i.e. governmental actors, private companies, local actor and NGO's (Risse and Stollenwerk, 2018; Schmelzles and Stollenwerk, 2018) that are fulfilling various functions in the absence of state actors. However, other institutions can undermine the authority of government institutions' legitimacy since people feel that they failed and give credit to other institutions. Nonetheless, in areas of limited statehood there is an opportunity of hybrid governance whereby responsibilities of a region are distributed between different institutions, this allows for efficient and effective enforcements of duties that does not exceed the capabilities of institutions (Schmelzle, 2011). NGOs have an enormous role to play in supporting rural coastal communities by having a better grasp of local challenges. They often compensate for the shortfalls of government institutions and can be seen as a 'solution' to the problem of limited statehood (Schmelzles and Stollenwerk, 2018; Reiser and Kelly, 2011). This brings me back to the concept of bricolage. Indirectly, NGO's contribute towards governance in two ways; they act as non-state regulators and they influence the regulatory duties of other non-state regulators. However, their intentions are good in the sense that they try and support the community through their different workshops and projects that provide the community with the necessary knowledge and skill to find employment or start a business (Schmelzles and Stollenwerk, 2018).

CHAPTER THREE: METHODS AND APPROACHES

3.1. Introduction

Qualitative data collection methods were used to fulfil the objectives of this research project. Qualitative data methods include but are not limited to semi-structured interviews, participant observation, and focus groups. It provides a holistic approach to gain insight into people's views and actions as well as the nature of the areas they inhabit. Baseline information of the community was attained from Aziz (2017)'s Honours project. The community trusted the researcher, due to the relationship that was built through the previous study that was undertaken in 2017. A case study approach was adopted for this research project as it allows the researcher to gather multi-faceted and first-hand understanding of a complex issue. This approach provides insight into the relationship between communities and institutions and how this relationship affects their livelihood strategies; through drawing on the perception and experiences of the people in the community(Crowe et al., 2011). A research assistant was a pointed from the community to assist in conducting this research project through organising participants for the focus group, semi- structured interviews with key informants as well as acted as a translator during all interviews and activities with the community. A transect walk was conducted with the research assistant to identify key attributes and characteristics of the community and to obtain an update on issues facing the community.

The activities conducted in the focus groups in this study were adapted from the Rapid Vulnerability Assessment (RVA) tool (Raemaekers and Sowman, 2015). The RVA is a community- based participatory methodology consisting of multiple exercises conducted in a workshop setting that aims to understand socio-ecological vulnerability, through exploring the communities' experience and perception of environmental variability and change, the impacts on livelihoods associated with change and finally, works with participants to identify adaptation strategies to deal with change (Sowman and Raemeakers, 2018; Sowman and Raemeakers, 2015). The RVA is useful in gathering basic information about the community's livelihoods and their vulnerabilities in a short space of time.

Semi- structured interviews were conducted with institutional actors including government officials who are involved in policy-making and management of the communities' access to resources and services. Interviews were also conducted with individuals from private companies in the area and non- governmental organizations (NGOs) working in the community. Semi-structured interviews were conducted with the people living in the community to understand their perception about coastal risks and how it is being managed by the institutional actors.

3.2. Case Study Approach

A case study approach was used for this research project to obtain in-depth knowledge of a complex system (Crowe et al., 2011). It ensures that the case study site is observed through several lenses which can uncover certain issues that were maybe not apparent and create a better understanding of the system. This approach is predominantly used in social science but

as well as across other different disciplinary fields. The approach is used to explore a complex system in a given area.

There are three main types of case study approaches intrinsic, instrumental, and collective (Crowe et al.,2011). The instrumental case study approach was used for this research study which draws on a specific case to gain better insight and a deeper understanding of the phenomenon. A case study approach explains, explores, or describes a phenomenon in the everyday context in which they occur.

Buffeljagsbaai is a small knit coastal community and therefore a case study approach was ideal in helping understand the relationship between the institutions and the community and the effectiveness of government strategies in addressing coastal related risk as well as identify what gaps exists between the community and institutions.

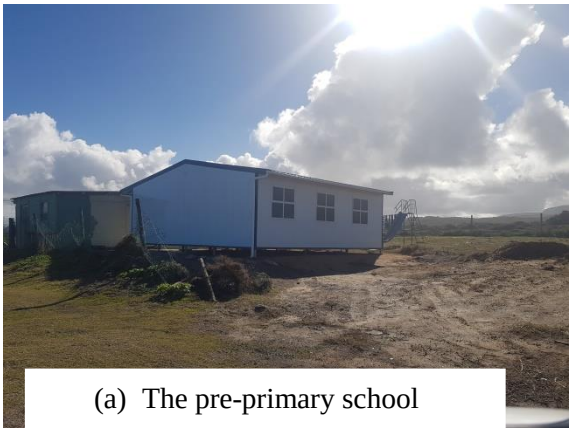
3.3. Prior Work and Sampling

Prior to conducting the research in the community, it was necessary to conduct a pilot visit in the community to seek their consent regarding this research and explain the reason for and purpose of the project. The scoping visit was also used to organise focus groups and identify potential and willing interviewees, discuss time frames so that field work did not interfere with the fisher's activities or any other prior commitments. The community of Buffeljagsbaai is small and therefore snowball sampling for participants would be better suited to generate the necessary information for this research study.

Snowball sampling was used to determined who would participate in the research project. A research assistant or key informant recruits willing participants with the required knowledge to take part in research activities (Handcock & Gile, 2011; Biernacki and Waldorf, 1981). The snowball sampling was the preferred method because Buffeljagsbaai is a small community and specific information was needed for this study which meant that members of the community with the necessary knowledge relevant for this project could participate. Fishers and their families were the focus and were able to provide the data related to the project, whereas a community member that is not involved in the small – scale fisheries (SSF) would not be able to provide the necessary information. A key informant from the community gathered members of the community that would be able to participate in the RVA activities and who were comfortable doing semi-structured interviews.

3.4. Transect walk

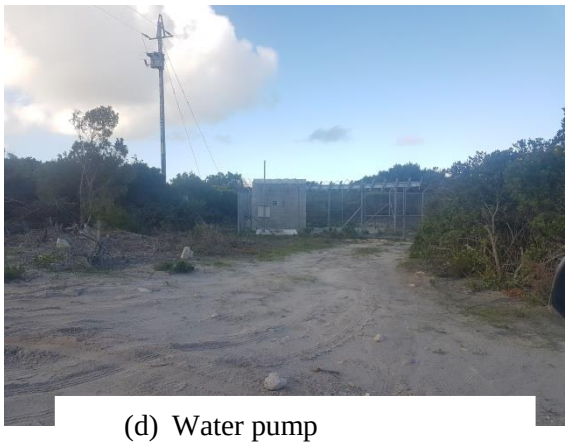
Key features were identified during the transect walk in the community as shown in the images below. This included a school, community hall, small shops, liquor stores, and the harbour. A transect walk is tool used for describing or mapping out key features, landscapes and main land uses within an area or community. One of the key informants accompanied me for the transect walk through the community.



(a) The pre-primary school

(b) The harbour

(c) The Abalone Farm



(d) Water pump

<u>The images (a- d)</u> Key features in the community. a) A pre-primary school to teach children to read and write. B) The harbour situated north of the community. c) The Abalone Farm was recently established and is situated at the entrance of the community. d) The community's water pump is situated 400m outside of the community.

3.5. Focus Group

Focus group discussions are organized meetings with members of the community to discuss specific issues and concerns regarding the study site. These discussions are conducted in a relaxed manner to allow the participants to feel comfortable and speak freely about specific topics(Kitzinger, 1995). Focus group discussion highlighting the attitude of the community towards specific topics, helps identify rules and habits of the community, provides insight into the social processes. It encourages conversations about sensitive topics and reveals emotions and experiences from participants that were maybe not apparent during interviews (Kitzinger, 1995). Some exercises from the RVA were used to explore issues of vulnerability.

Rapid Vulnerability Assessment

The RVA allows for a holistic approach over a short period of time, to study and understand the changes, stressors and vulnerabilities of communities that link to socio- ecological circumstances, governance setup and so forth. The RVA captures and explores the fishermen's perception of change and unpacks the threats/stressors linked to socio- ecological factors that could have an impact on their livelihoods (Raemaekers and Sowman, 2015). An important characteristic of the RVA is investigating coping mechanisms and adaptive strategies of the community. The RVA validates whether these strategies are compatible dealing with vulnerability (Raemaekers and Sowman, 2015).

One community focus group discussion (CFGD) was conducted on a Monday afternoon which consisted of 12 female members of the community within the age group of 25 to 60. The research assistant gathered female participants for the focus group discussion. Elders were chosen to participate in the group discussion to help understand how the community has changed since they were young and help identify key climate related changes as well as establish a timeline of events. The group included both fisher women and non-fisher women to understand the different challenges of each household. Lastly, the group included younger participants to understand the current challenges of the community. The focus group was divided into two sub-groups to prevent any dominance of an individual allowing everyone to participate. The focus group ran over a period of three hours and various group activities based on the RVA methodology were conducted to discuss key issues. The group activities included:

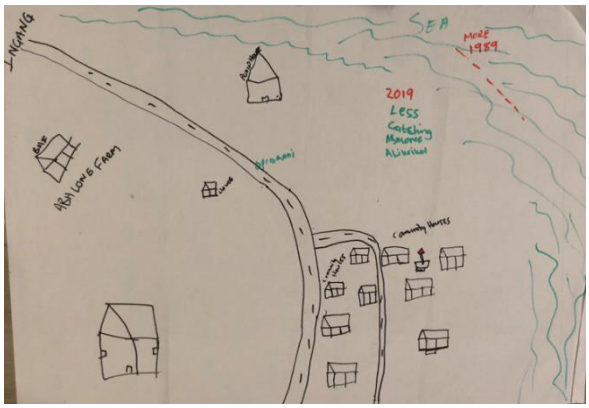
- Mapping of attributes that are important to the livelihoods in the community
- Identification of the different livelihood strategies of the community
- Preparing two timelines of major events (developments in the community and environmental changes) that occurred in the community
- Ranking of environmental changes/stressors
- Identifying and ranking of the level of involvement of different institutes involved in the community

Below are images depicting some community members participating in the focus group activities.

<u>Images (e and f):</u> Community Focus Group Discussion

Mapping of community

Mapping of the community allows the participants to feel more at ease and acts as an ice breaker to encourage the participants to voice their opinions. It also provides the researcher with an overview of characteristics the community deems important and the reasoning behind it (Raemaekers and Sowman, 2015). Each sub-group mapped out key features and characteristics in the community that were important for livelihood activities as shown in the images below.

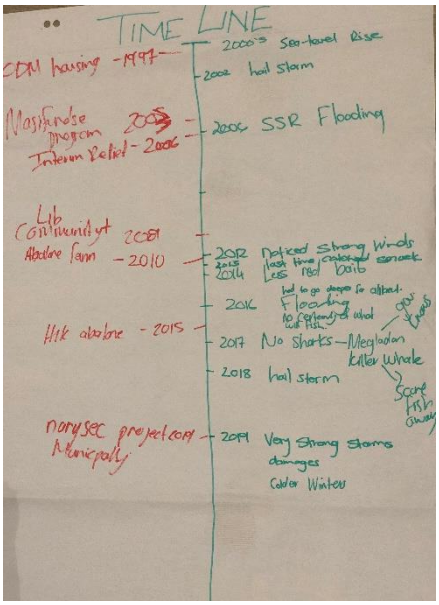


(Images g and h: Mapping of the community done in the focus group discussion)

Timelines

Timelines are useful tools to identify significant events or changes in the community such as environmental changes or risks or other new developments. This activity provides information about the changes that occurred in the community and how they adapted over the years (Asia Forest Network, 2002). The elders tell stories of their history and how the community was shaped by significant events.

The participants worked together to create two timelines as shown in the images below. The one timeline describing major events that occurred within the community such as development of new housing and the other timeline describing the environmental changes that have occurred over time.

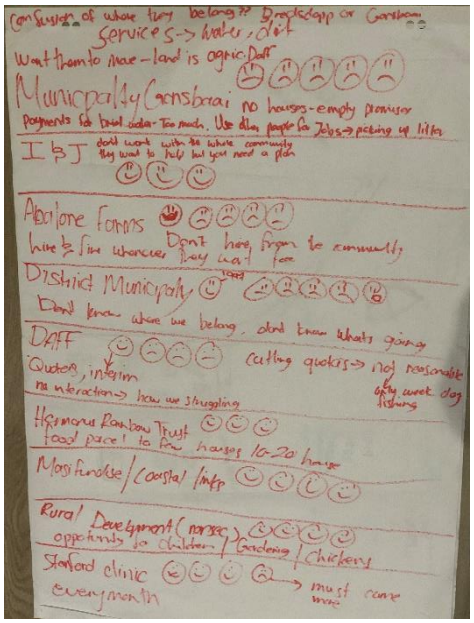


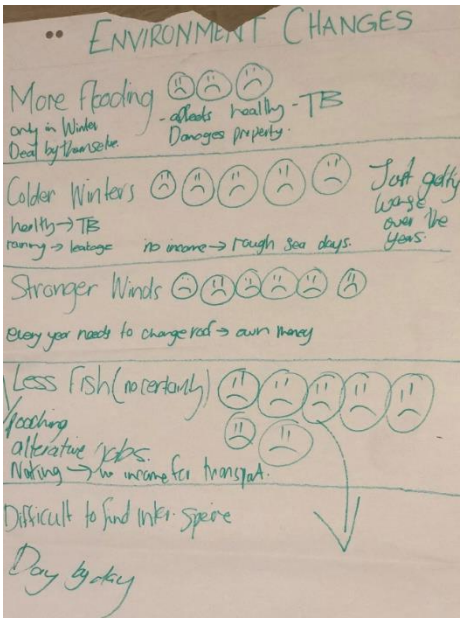
(Image i: Timeline depicting key events that occurred in the community)

Identification and Rating of institutional actors' involvement and managing risks

The CFGD participants were asked to identify the government institutions and other organisations (NGO's , private companies etc.) that were involved in resource management in the community

Participants were then asked to rate the involvement of the different institutional actors in responding to their local living and livelihood circumstances. Rating is a process whereby the community indicates the order of importance of things, in this case, they were asked to rate the order of importance among institutional actors involved in responding to the environmental changes experienced in the community. Happy icons (☺) and sad icons (☹) were used to rate the different institutions based on how their role affected the community, positively or negatively as well as used to rank the level of severity of each environmental change within the community. The community could only use five face icons during this exercise to rate the institutions and the environmental changes. The images below present the rating activity of environmental changes and the involvement of institutions in the community.





(Images j and k: Example of ratings done by the community for institutional actors and Coastal Change and Risks)

3.6. Key informants' interviews

The semi-structed interviews allows participants to discuss certain topics they feel are important and may reveal new information about issues (Asia Forest Network, 2002). The researcher must provide a safe and confidential space for the participant to feel comfortable to speak about sensitive topics and give a significant understanding of their lives. This enables the researcher to understand the perspectives of the community and institutions and highlight those which are important to them. Furthermore, identifying the disconnects between the community and those in the institutions.

Semi-structured interviews (SSI-C) were conducted with key informants to ensure that the data obtained was accurate and comprehensive. Semi- structured interviews were also used to collect more data on what was discussed in the focus group. This approach to data collection is known as triangulating data whereby the researcher has multiple sources to corroborate information gathered. This is useful as it fills in mismatch information and generate a fuller picture of the situation at hand. Semi-structured interviews (SSI-I) were conducted with some of the institutional actors that were involved in the community of Buffeljagsbaai. This provided an understanding of their roles and relationships with the community. Semi-structured interviews were conducted with members of the community engaged in livelihoods dependant on marine resources, this included the co-operatives (Blinkwaters), fishermen, and their wives. The interviews identified the diverse livelihood strategies in the community and provided an understanding of the roles of co-operatives.

The table below indicates the number of interviews conducted with the different community members and institutions.

Table 1: Breakdown of interviews conducted

Interviewees	Number	Year
Overstand Local Municipality	1	2020
Overberg District Municipality	1	2020
Department of Environment, forestry and fisheries	1	2020
ABALOBI ICT4 Fisheries	1	2020
Buffeljagsbaai Abalone Farm	1	2020
Fishermen	8	2019/2020
fisherwomen	9	2019/2020
Non-fishers	3	2019/2020

A total of 25 semi-structured interviews were conducted with local intuitional actors and community members in Buffeljagsbaai. These interviews were conducted face-to-face, over the phone and via email. The interviews conducted with community members were organised by the research assistant. Five interviews (2 males and 3 females) were conducted with members of the Blinkwaters Co-operatives because they are the spokesperson of the community and were involved in one of the community projects supported by an NGO. Another six interviews were conducted with fishermen of the community; some were done individually and others in pairs. Six interviews were conducted with fishermen wives and fisherwomen whilst three non-fisher people were interviewed.

3.7. Identifying relevant policies and legislative framework for governing Coastal Risks

South Africa has various legislations and policies that govern coastal risks and governance. For this research project, all scales of governmental legislation were looked at regarding the environment and the role of institutions towards the public.

On a national level several legislative frameworks identified for this project. The first national piece of legislation that was thoroughly analysed was the Constitutions of the Republic of South Africa of 1996. Three chapters were selected for this research project: Chapters 2, 3 and 7. This provided a baseline on human rights and the duties of institutions towards each other, the public and environment. The second piece of legislation what was identified was the National Environmental Management Act of Act No. 107 of 1998 as well as the National Environmental Management: Integrated Coastal Management Act No. 24 of 2008, which provided information about the importance of coastal regions and responsibilities to different parties at a national level. The last two national legislative frameworks that showed relevance to this research project were the Climate Change Bill of 2018 and the National Climate Change Adaptation Strategy of 2019. These documents provided information about how intuitions should respond to climate change and the process of adaptation to coastal risks.

The various plans and programmes on the district level regarding coastal risks, climate change, institutions, were important to identify. These programmes and plans included: Overberg District Municipality (ODM) Spatial Development Framework, Disaster Risk Management Framework and plan for ODM of 2016, the ODM Coastal Management Plan, ODM Coastal Management lines of 2015 and lastly the Overberg Climate Change Response Framework.

3.8. Limitations

There are certain limitations on this study. The community is suspicious of an outsider coming into the community because they have been misled in the past by outsiders and disappointed by false promises, and they claim there has been abuse of power from higher authorities. Therefore, trust needed to be established with the community in order for them to feel secure sharing information that is personal and relevant to their livelihoods. However, the community trusted the researcher due to previous work conducted in their community and were supportive of the project and willing to participate in it.

While the intentions were to hold several focus group meetings with different interest groups in the community, only one focus group discussion was conducted consisting of only female participants. Men did not want to participate in any focus groups because they were out at sea or preferred one-on-one interviews. One reason for the reluctance to participate in a group discussion was due to the fact that some members of the community are involved in harvesting coastal resources illegally, making it difficult to discuss their activities in an open forum. Thus, semi-structured interviews were preferred as confidentiality could be assured and fishers and members of the community felt safe speaking about certain topics that might be sensitive in a community setting.

The outbreak of the Covid-19 pandemic brought unforeseen challenges as it was not possible to conduct field work with participants after March 2020. Thus, focus groups and interviews that were planned in 2020 could not be conducted. In addition, the institutional actors were extremely busy and responses to emails and phone calls to set up interviews, were very limited. Institutional actors that agreed to an interview preferred doing interviews via email and texting through Whatsapp.

3.9. Ethical consideration

It is important to take into account ethical considerations in social science research. The participants were fully informed about the aims and objectives of the research study as well as the methodology that would be used. When conducting interviews and focus groups it is important to appreciate the time and effort the participant has expended as well as respect the information and opinions that they have provided. Therefore, it was important to gain the trust of participants, especially in areas where there are illegal activities taking place and where there is existing conflict between members of the communities as is the case in Buffeljagsbaai. Hence, the researcher needed to ensure confidentiality of information provided by interviewees. Interviews and focus groups were voluntary therefore no participants were required to participate. They were able to decide how much information they were comfortable giving and could withdraw from the process at any time. Extra sensitivity was taken when dealing with the focus group to avoid unnecessary conflict between community members as well as sensitive topics such as poaching

CHAPTER FOUR: SOUTH AFRICA'S POLICY AND LEGISLATIVE FRAMEWORK FOR GOVERNING COASTAL RISKS

4.1. Introduction

Coastal region are dynamic zones as it is the interface between the ocean and land. These regions house an array of ecosystems and habitats that support both marine and terrestrial species which are confronted with climate and human induced coastal risks. The South African coastal regions are highly dynamic and support an array of habitats and ecosystems as well as socio-economic systems. The awareness of the vulnerability of coastal regions has resulted in the promotion of innovative, integrated, participatory and adaptive approaches in the development and management of coastal regions, with the view to enhance its integrity, resilience and to improve human wellbeing (Sowman and Malan, 2018). Various legislation, policies, strategies and programs were developed to effectively address coastal risks. South Africa's legislative framework for managing the coast and associated coastal risks would therefore require highly complex and collaborative forms of governance. In this chapter, the policy and legal framework that applies to coastal management in SA is reviewed. Key policies and pieces of legislation that are elaborated upon include: The Constitution of the Republic SA of 1996; the National Environmental Management Act No. 107 of 1998; National Environmental Management: Integrated Coastal Management Act No. 24 of 2008; Climate Change Bill of 2018 and the National Climate Change Adaptation Strategy of 2019. It will also examine the legal and policy framework, identify responses to coastal risks in the ODM and the OLM.

4.2. Constitution of the Republic South Africa of 1996

The Constitution of the Republic of SA of 1996 was approved by the Constitutional Court on the 4th of December 1996 and took effect the following year, 4th February 1997. The Constitution is the supreme law of the land and no individual or parliament can pass a law that goes against the Constitution. The Constitution sets out the values and rights that underpin the new democratic SA, establishes various institutions to enable the fulfilment of these rights and clarifies how other legislation needs to align with the fundamental provisions in the Constitution. It also sets out a schedule of competencies for the different spheres of government including national provincial and local government. Of particular relevance to this dissertation are three chapters that deal with human rights- the Bill of Rights; Co-operative Governance and Local Governance. The relevant provisions will be discussed in relation to impacts of coastal risks on small-scale fishing communities and their adaptation to risk through the aid of various institutions.

Chapter two consists of the Bill of Rights and outlines the rights of all people in SA. One of these basic rights refers to the right to a safe and healthy environment.

According to chapter 2, section 24:

"Everyone has the right-

(a) To an environment that is not harm to their health or well-being; and

(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that"

Section 24 emphasizes the need to preserve the integrity of the environment, which would include coastal regions, through ensuring developments that are ecologically sustainable while simultaneously promoting economic and social development. Thus, protection against impacts of coastal risks on health and wellbeing would be included under this environmental provision.

Chapter 3 addresses the matter of Co-operative Government and identifies the different spheres of government and what is required of them.

According to Chapter 3, section 41:

"All spheres of government and all organs of state within each sphere must-

(b) secure the well-being of the people of the Republic;
(c) provide effective, transparent, accountable and coherent government for the Republic as a whole;
(h) co-operate with one another in mutual trust and good faith by
(i) fostering friendly relations;
(ii) assisting and supporting one another;
(iii) informing one another of, and consulting one another on, matters of common interest;
(iv) co-ordinating their actions and legislation with one another"

Section 41 clearly describes what the relationship between the three different spheres of government should be, requiring that they must co-operate and work collaboratively to address the needs of citizens. Furthermore, it requires the need to build capacity within each sphere as well as across all spheres of government in order to execute their functions.

Chapter 7 of the Constitution deals with Local Government and service delivery at a local level.

According to Chapter 7, section 152:

"The objects of local government are -

(b) to ensure the provision of services to communities in a sustainable manner;
(c) to promote social and economic development;
(d) to promote a safe and healthy environment; and
(e) to encourage the involvement of communities and community organisations in the matters of local government."

Section 152 provides the basic roles and responsibilities of local municipalities and the manner in which these tasks should be done. These three chapters of the Constitution set out important legal principles and provisions with regards to management of coastal risks, which are equally applicable in small fishing communities. Firstly, all three sections emphasize that an individual or community is entitled to live in an environment that is safe and that does not cause any harm in any way. Secondly, Section 154 states that "*The national government and provincial governments, by legislative and other measures, must support and strengthen the capacity of*

municipalities to manage their own affairs, to exercise their powers and to perform their functions." This further emphasises the importance of all spheres of government to work co-operatively and adopt an integrated approach to address societal issues, which would extend to addressing impacts of coastal risks and adaptation between all levels of government. Thus, Sections 24, 41 and 152 stipulate that coastal regions ought to be protected through sustainable approaches and reduce the effects of external environmental changes including developments and constructions, and the associated impacts. In conclusion, the protection of this vulnerable environment should be attained not only by sustainable measures but alongside co-operative governance and inclusivity of all parties involved.

4.3. The National Environmental Management Act No. 107 Of 1998

The National Environmental Management Act (NEMA) Act No. 107 of 1998 is the overarching umbrella of environmental legislative framework that gives legal force to Section 24 of the Bill of Rights. The NEMA (National Environmental Management Act, No. 107 of 1998) defines the environment as " *the surroundings within which humans exist and that are made up of—*

i. *the land, water and atmosphere of the earth;*
ii. *microorganisms, plant and animal life;*
iii. *any part or combination of (i) and (ii) and the interrelationships among and between them; and a local level.*

These provisions require all parties to be involved and provide input and knowledge on the issues in order to create a holistic understanding of the issues being addressed. Furthermore, Sections 24 and 41 highlight the need to build capacity *the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing*"

Chapter one of NEMA defines key principles which are focused at promoting co-operative governance and ensuring that the rights of people are upheld while simultaneously recognising the importance of economic development.

According to the Objectives of NEMA:

- "*everyone has the right to an environment that is not harmful to his or her health or well-being;*
- *sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations;*
- *the environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must co-operate with, consult and support one another*"

The NEMA frameworks place great importance on the different spheres of government and different institutions working together to achieve integrated and sustainable management. The NEMA explicitly makes provision for integration of sector institutions across all levels of government by providing key principles for decision-making with issues related to the environment, including procedures prescribed for co-ordinating action amongst levels of

government (NEMA of 1998). The NEMA further reiterates that government institutions at all spheres of government have concurrent responsibilities with regards to the environment. Therefore, all departments must cooperate, consult with and support each other. This is the foundation of co-operative governance and a term being used throughout the Act and thus could be regarded as the backbone of integrated environmental management (Bray, 1999). Through co-operative governance, NEMA may achieve the right to a safe environment.

4.4. National Environmental Management: Integrated Coastal Management Act No. 24 of 2008

Prior to the democratic elections in 1994, the Department of Environmental Affairs, now known as the Department of Environment, Forestry and Fisheries (DEFF), began an inclusive process to formulate a new policy that would transform the approach to coastal management in SA. It was a participatory process that involved different levels of government, the private sector, researchers and civil society stakeholders. The formulation process of the new legislation was guided by principles and approaches advocated by international integrated coastal management practitioners as well as the South African Constitution which, promoted participation, ensuring ecological integrity of coastal systems, enhancing equitable access to coastal resources and areas and promoting economic and social development (Sowman and Malan, 2018). The ICMA was informed by the White paper for Sustainable Coastal Development in SA, which was adopted in 2000. In summary, the White paper aims to ensure optimal utilization of the coastal zone concurrent to preserving ecosystems and preventing risk to people and their property. The Integrated Coastal Management Act (ICMA) is a comprehensive and innovative piece of legislation that has been commended by the international coastal management community (Sowman and Malan, 2018). The ICMA represents a fundamental paradigm shift in managing the use and development of coastal resources and areas.

The ICMA achieves this through a set of objectives, as follows:

(b) to provide, within the framework of the National Environmental Management Act, for the co-ordinated and integrated management of the coastal zone by all spheres of government in accordance with the principles of co-operative 45 governance;
(c) to secure equitable access to the opportunities and benefits of coastal public properly

The ICMA highlights the importance of coastal zones and requires co-operative governance that employs a co-ordinated and integrated management approach in all coastal regions. It seeks to ensure access to and benefits from coastal resources for everyone, and to protect the integrity of coastal regions.

One of the most noteworthy attributes in the ICMA is the recognition of the importance of coastal regions in people's lives and provisions to ensure equitable access to coastal regions whilst simultaneously protecting its integrity (Sowman and Malan, 2018)

Chapter two of the ICMA of 2008, identifies and clarifies the components of the coastal zone which include the higher water mark, measuring affecting erosion and accretion. This further discusses coastal protection zones, coastal access land whereby explaining the responsibilities

of municipalities with regard to coastal access land; coastal waters and coastal protection areas; special management areas and lastly the establishment of coastal management lines.

According to chapter 2, section 8:

"*The Minister may by notice in the Gazette, declare in the manner contemplated in subsection (2) any state-owned land as coastal public property in order—*

> *"(e) to protect people, property and economic activities from risks arising from dynamic coastal processes, including the risk of sea-level rise*"

Another comprehensive feature of the ICMA is the development and implementation of coastal management programmes which provide a legislative framework to promote and achieve integrated coastal management and planning. These programmes are required at national, provincial and local levels and sets out how the objectives of the ICMA may be achieved on the ground. These programmes like the ICMA require co-operative governance to achieve their goal.

4.5. Climate Change Bill of 2018

Climate change legislation is relevant to this study as the basis of this studies is understanding how institutional actors respond or address climate-related risks or coastal risks in small-scale fishing communities. Therefore, identifying and understanding what should be done in a case of coastal risks will help reveal the disconnect between mandates and what is being translated on the ground. The National Climate Change Response Paper (NCCRP) of 2011 recognises that coastal human settlements are vulnerable to SLR, flooding, coastal erosion, increased frequency and intensity of coastal storms (*Draft Climate Change Bill*, 2018: chap1, s2). In response to these threats the NCCRP specifies the need to enhance disaster risk reduction and management as well as a succinct approach to adaptation.

The Climate Change Bill of 2018 is currently in a draft form and seeks to provide an all-encompassing legislative framework that addresses the response to climate change including mitigation and adaptation measures.

According to the Climate Change Bill, understanding the impacts of climate change on the vulnerable is important in developing a national adaptation strategy with the consultation of the various departments. The Bill further states that *"Climate change adaptation within the Republic must be managed in a coherent and coordinated manner and in accordance with a National Adaptive Strategy"*. Furthermore, the Bill promotes integration across all disciplines and sector departments, on the vertical and horizontal scale, to achieve an adaptive approach that encompasses insights from all angles.

The Bill requires provinces and municipalities to undertake a climate change response assessment and to develop and implement a climate change response implementation plan to address the needs identified. Provincial and municipal climate change response implementation plans must include measures and strategies for adaption and mitigation and account for the

risks and vulnerabilities linked to climate change.[4] These climate change needs and response assessments, as well as climate change response and implementation plans, are intended to capture the unique climate characteristics and risks of the relevant province or municipality and must be integrated into existing provincial or municipal plans.

A great responsibility is placed on provincial and local institutions of SA to implement these policies and address, mitigate or plan for adaptation to climate change. These institutions can therefore play an important role in the lives of individuals that are vulnerable to the impacts of climate change or climate induced change. One of the responsibilities the Bill places on institutions is to enable

(a) "*a reduction in the vulnerability of society, the economy and the environment to the effects of climate change, strengthening resilience of the socio- economic and environmental system and enhancing the adaptive capacity of the national environment and economy to the impacts of climate change*
(b) minimising the risk and vulnerabilities to current and future climate scenarios"

4.6. The National Climate Change Adaptation Strategy of 2019

The National Climate Change Adaptive Strategy (NCCAS) (National Climate Change Adaptation Strategy, 2019) has been finalised and endorsed by the cabinet in August 2020. The NCCAS is mentioned in the Climate Change Bill in Chapter 4, describing how it should be developed and implemented. The NCCAS provides a common reference point for addressing climate change adaptation in SA.

The NCCAS vision for SA is to transition to a climate resilient country by encouraging sustainable development which is guided by adaptation and the reduction of climate change impacts. In doing so the NCCAS has formulated key principles for implementing their vision. The NCCAS will be driven by SA and co-ordinated with other legislation, policies, plans and programmes. The NCCAS is people-centred placing the needs of people at the forefront of their implementation and development. A common thread throughout the NCCAS is the participation of different stakeholders- government, private sector and the public- in the development and implementation of programmes, plans and strategies to deal with climate change. In addition, one of the key principles is to ensure that the voice of the vulnerable are heard and that the NCCAS can help build resilience and adaptive capacity in these communities.

4.7. Local government policies, plans and programmes in response to climate change and coastal risk in the Overberg District Municipality

4.7.1. Overberg District Municipal Spatial Development Framework

[4] See s9(2)(a)-(b).

Prior to the 1994 democratic elections, the spatial management of growth in rural and urban environments was underpinned by principles of racial discrimination and separate development (Overberg District Municipal Spatial Development Framework, 2014). A new system was adopted post 1994 that was guided by the Development Facilitation Act and the Municipal Systems Act. This new system consisted of two components:

The first, the Spatial Development Framework (SDF), would provide potential patterns of land uses and direction for future growth, such as indicating alignments of Urban Edges and identifying other special development areas (Overberg District Municipal Spatial Development Framework, 2014). The SDF is merely a policy tool to guide and inform land development management but, has no power to change real rights on land. These are controlled by the second component, The Land Use Management Scheme (LUMS), which has a binding effect and confers real rights on land. The LUMS may be amended from time to time because of the dynamic nature of development of the municipalities and account for the changing socio-economic and environmental circumstances (Overberg District Municipal Spatial Development Framework, 2014). For instance, LUMS could achieve this through processing of rezoning, subdivisions and removal of title deed restrictions applications. In these instances, the SDF would play an important role by guiding the direction of future changes.

For the Overberg District Municipality, the SDF is an important part of the Integrated Development Plan (IDP). The SDF links with the objects of the IDP, and the Budget of the municipalities (Overberg District Municipal Spatial Development Framework, 2014). The SDF becomes the spatial representation of the IDP objectives that is funded by the Budget. The key categories of the SDF are as follows: natural environment, human made environment, economic sector, community development district management.

The SDF aims (Overberg District Municipal Spatial Development Framework, 2014):

"Indicate spatial implication of the IDP propose development strategies for the promotion of sustainable development and indirectly promote the well- being of the people. Integrate strategies of the IDP with various policies. Create options for the implementation of UNESCO Man to promote sustainable development."

The success of the SDF depends on the involvement of all involved parties including all levels of government, private sector and public as well as the collaboration and co-operation of parties involved. It also requires constant research.

The SDF links development objectives from the Integrated Development Plans (IDP) and the Budget of a particular municipality. Thus, becomes a spatial representation of the IDP objectives that guide each project through the budget of a local municipality. The IDP are the main planning tool for local government in SA. All municipalities are required to develop an IDP in terms of the Municipal Systems Act, 2000 (Act 32 of 2000). The IDP is a tool used by the municipality to plan for future developments through coordination of decision-making and budgeting of local government in the improvement of the quality of a particular region for a community. The IDP planning process requires working with local residents to develop a vision for the municipality as well as plan strategically to ensure equitable service delivery, promote economic development and infrastructure and ensure sustainability. The IDP provides a basis to focus with regards to their budgetary planning process and the policies, plans, strategies, etc., of the SDF is recommended to be implemented in the Overstand Local

Municipality. The SDF provides information about the current land uses, transport and the location of resources. It identifies opportunities and constraints as well as proposes spatial growth patterns for the region. The SDF should include the impacts of natural environments such as rivers and sensitive areas, housing and infrastructure, socio-economic issues relating to the economy and human development indicators. The SDF guides all municipality departments, including sector departments. Therefore, informs the plans and activities of the departments.

4.7.2. Disaster Risk Management Framework and Plan for the Overberg District Municipality of 2016

The Western Cape region is one of the most disaster-prone areas in SA (Strategic Plans & Frameworks | Overberg District Municipality, 2021) The Disaster Risk Management framework (DRMF) for the ODM is guided by the framework developed at the provincial level. The DRMF at the provincial level seeks to create centres to assist with vulnerability reduction in disaster prone areas, communities and households with a focus on integrating disaster risk preventions. The local DRMF comprises of 10 key performance areas (KPA) which is informed by key objectives and key performance indicators to guide and regulate its implementation. Some of the KPA include:

KPA 1: Institutional arrangements which focus on co-operative governance, community and private sector involvement.

KPA 4 is disaster management planning and implementation what outline the requirements to inform approaches, plans, programs and projects to reduce disaster risks

KPA 5 Disaster response, recovery and rehabilitation which addresses for an integrated and coordinated policy that focuses on rapid and effective responses to disaster and the recovery.

KPA 6 is disaster management training and capacity building which provides training for all associated professions, community members, volunteers and all role players, in capacity building.

"This Disaster Risk Management Plan is produced by the Overberg District's Disaster Risk Management Centre (DRMC) as part of its responsibility in terms of the Disaster Management Act, (Act 57 of 2002) and per the Amendment act of 2016 and is distributed to the wider emergency management community and to other government and non-governmental agencies, as applicable."

The Disaster Risk Management Plan (DRMP) is a document that defines and describes important basics and procedures "at the strategic level" to prevent and mitigate disasters or hazardous events. The DRMP promotes rapid and effective responses in times of disasters which will enable, lives to be saved, reducing risk exposure, suffering caused, protection of people's property, reduction of economic and social losses the protecting the integrity of the environment.

The DRMP includes a Multi- Disciplinary Incident Management Plan, the Procedure for Emergency Incidents and Disaster Response which set out some of the procedures that need to be implemented when a disaster occurs and how to respond to routine incidents and exercises.

Local authorities at these centres need to familiarise themselves with the system and be prepared when the impacts escalate and be aware of the current situation and the probable future risks.

The DRMP includes disaster risk profile quantification tables that rates the severity of the disaster, the likelihood of it occurring and a description of the likely impacts that will be caused. However, this does not explicitly mention the Buffeljagsbaai community.

4.7.3. Overberg District Municipality Coastal Management Programme

The municipalities mandate regarding ICM is especially guided by section 48 and 49 of the NEM: ICMA. The ICM requires all spheres of government to develop a Coastal Management Programme (CMP). The CMP is a policy that contains a set of principles, goals and objectives that guide decision-making processes, with the vision to achieving long term sustainable outcomes relating to the coastal region. The CMP consists of three components: situational analysis, stakeholder engagement, programme implementation (Overberg District Municipality Coastal Management programme, 2015).

The situational analysis, of the CMP of the ODM, is a document which is a review and interpretation of existing legislation on the biophysical and socio-economic characteristics of the coastal regions to identify potential opportunities or constraints (Overberg District Municipality Coastal Management programme, 2015). This component of the CMP integrates legislative documents, strategies and, plans within the ODM to create a holistic outcome relevant to coastal management. Through this process, it is possible to identify concerns that need to be addressed and can be categorized depending on its urgency.

Stakeholder engagement is an important aspect and requires stakeholders to voice their interests and concerns contributing to the relevance, legitimacy and efficacy of the CMP. This encourages the officials in local municipalities within the ODM to discuss challenges, as well as identify gaps and needs in order to promote sustainable coastal management (Overberg District Municipality Coastal Management programme, 2015). According to the ODM vision statement "*We, the people of the Overberg District Municipality, celebrate the diversity, beauty and uniqueness of our coast and its communities. We strive for a safe, accessible coastal environment that is sustainably managed and protected for the benefit of current and future generations*". From this vision of the ODM, it can be seen that their vision resonates with chapter 2 of the Bill of Rights and NEMA principles. Finally, implementation strategies have been developed according to each area whereby specific instructions pertaining actions, strategies, involved parties and budgets towards reaching an effective coastal management are provided.

4.7.4. Overberg District Municipality Coastal Management Lines of 2015

In 2010 the Western Cape Province began the initiative to establish coastal management line along the Western Cape coastlines as required by the NEMA: ICMA (Act 25 of 2008). The Coastal Management Lines (CML) play an important role in responding to the effects of

climate change as it involves quantification and pro-active planning for future development. In the ICMA, Chapter 3 requires that the CML has prescribed boundaries that indicate the threshold of development along the coast or in vulnerable areas. The ICMA gives the local authority the power to designate areas through the establishment of management lines that are of high priority where development should be prohibited, and restrictions imposed. The intentions of the CML are as follows; to protect public and private property, determine the features that should be protected and lastly to preserve the value of the coast's integrity. This, however, is more challenging than it seems. The CML had to make provision for development already existing along the coast with some areas already extending into the hazardous zone making it difficult to create a solution. The main purpose of the CML is to influence how old and new developments are maintained over time and how new developments will be allowed to progress.

Although the ODM has major developments along the coast, there is very little that the CML can change or achieve. According to the CML, for the Overberg District, the Western Cape Government has not yet confirmed a methodology and there CML have not been implemented as of yet.

4.7.5. Overberg Climate Change Response Framework

The Overberg Climate Change Response Framework (OCCRF) is guided by a set of principles in the Constitution of The Republic of SA (Act No. 108 of 1996), the Bill of Rights (Chapter 2 of the Constitution), the National Environmental Act (Act No. 107 of 1998) and the Disaster Management Amendment Act (Act No 16 of 2015), the National Climate change Response White Paper (2011) and the Western Cape Climate Change Response Strategy. With this framework, the ODM aims to emphasize the importance of climate change responses for the district as well as identifying key response action for climate change for the different departments within the municipality. The ODM states *" This CCRF is meant to give a strategic overview of climate change responses that is relevant for the Overberg region; accordingly, not all of the responses identified in this document will be implementable by the District and local municipalities alone. This document is therefore not only aimed at the District and local municipalities, but also civil society including the private sector and NGOs as well as National and Provincial government and is intended to guide a wider Overberg climate change response informed by local knowledge".*

The climate change response can be divided into adaptation and mitigation. These two responses should be pursued concurrently as they can complement each other and pursuing them in isolation could compromise their outcomes. Therefore, in the decision-making processes determining appropriate responses should be an integrated approach. According to the OCCRF, climate change will have the largest impact on the poorest sectors of society. The effects of climate change will be felt on a local level (floods, drought, changes in rainfall and temperature) having serious implications for local communities. A study done by the Department of Environmental Affairs and Development Planning (2012) on the projected SLR in the Overberg District, revealed that when all sea-level factors are combined (coastal erosion, inundation, groundwater contamination and storm surges) the areas most at risk in the ODM are Struisbaai, Cape Agulhas, Quoin Point, Pearly Beach and, Vermont. It is important to note that the small community of Buffeljagsbaai falls within these risk regions.

The different climate change impacts and hazards, as well as the appropriate responses, were identified during a workshop with local and district municipalities and external stakeholders (OCCRF, CCRF workshop, 2017). The hazards, as well as the impacts caused by climate change, were identified and described, and actions were assigned to different municipal departments depending on their capabilities of responding. However, municipalities will find it challenging to implement some of these responses because it does not fall within their legal mandate as it is governed by the mandate assigned to district and local municipalities in The Constitutions of SA (1996). In these cases, the responsibility falls on other sectors within the ODM such as Agriculture, Water, Biodiversity/Conservation, Tourism, Government, Infrastructure and Human Settlements, Education, Business and Retail, Health, Fisheries, Energy, Transport, and Disaster Risk Management. It is important to note that the individual municipalities determine where the responsibility for a particular risk is best handled within their organisation.

4.8. Various Government institutions involved in the Buffeljagsbaai Community

This section looks at the various local government institutions' roles and responsibilities and their plans and responses to coastal-related risk and climate change within the Overberg District Municipality. In the prior sections of this chapter the policies and laws stipulate which agencies are responsible for implementing the provisions contained in the various Acts. Furthermore, roles and responsibilities of these institutions are spelled out in the law and align with the competencies in the constituent. This means that the constitution sets out, in a schedule, the competencies of national, provincial and local government. Therefore, based on the overview of the relevant policies, laws and strategies, it is clear that there are several government institutions that have a role to play in the Buffeljagsbaai area. Managing the coastal zone in this region is particularly challenging as it is a space where so many government departments have some level of jurisdiction and responsibility and there is a need for integration and co-ordination amongst the institutions.

These institutions include the Department of Agriculture, Fisheries and Forestry (DAFF) (now DEFF), Department of Trade and Industry (DTI), Department of Rural Development and Land Reform (DRDLR), Overberg District Municipality (ODM), the Overstand local Municipality (OLM) of Greater Hermanus, Stanford Clinic and the Hermanus Rainbow Trust.

Table 2 lists the various government institutions and their basic roles and responsibilities to their region and communities that fall under their jurisdictions.

Table 2: Roles and responsibilities relating to coastal risks and adaptation, of the various institutional actors involved in the Buffeljagsbaai community

Institutions	**Key Roles and Responsibilities**[5]
DEFF	• To ensure the right of citizens to an environment that is not harmful to their health or well-being • The protection of the environment for the benefit of present and future generations • Manage access to resources • Ensure the regulation and management of all biodiversity
Department of Rural Development and Land Reform (DRDLR)	• Social and economic development of Rural communities • Improve service delivery systems • Improve productivity in land reform project • To provide corporate support services
ODM	Delivery of Basic Services: • Disaster Management • Municipal Health Services • Regional Solid Waste Management • Provincial Roads • Environmental Management • Tourism • Spatial planning
OLM	Municipal Transformation, Institutional Development and Good Governance • Basic Service Delivery and Public Participation • Financial Viability and Financial Management • Local Economic Development • Infrastructure for Service Delivery

Table 3 displays the government institutions and the policy or strategy documents that explains the various roles and responsibilities of these institutions with regards to climate change and coastal risks.

[5] Stated in the relevant operational documents and from interviews (SSI-I, 2020)

Table 3: Government Institutions and their stated climate change and coastal risks strategies and programs (SSI-I, 2020)

Institution	Response to Climate Change and Coastal Risks
Overberg District Municipality	• Prepare Coastal Setback Lines (DEA&DP) • Commission Coastal Access Study (CAS) • Develop a Coastal Management Programme (CMP) • Establish a Provincial Erosion Task Team • Prepare a Regional Economic Development Strategy (REDS) • Disaster Risk Management Framework of 2016 (DRM)
Overstrand Local Municipality (Gansbaai)	• Coastal Access Study (CAS) • CMP • Coastal management lines (Coastal set- back lines) • Overberg Climate Change Response Framework (OCCPF) • Draft of Environmental Management Overlay Zones (EMOZ) (must still be approved by the Council)
DEFF	• Climate Information and early warning systems for supporting the Disaster Risk Reduction and Management Sector in South Africa under Future Climates • Climate Change Adaptation Perspectives for Disaster Risk Reduction and Management in South Africa • Climate Change Adaptation Perspectives on Urban, Rural, and Coastal Human Settlements in South Africa • Climate Change Adaptation Perspectives on Food Security in South Africa • Climate Change Adaptation Perspectives to future Climates in South Africa • Long Term Adaptation Scenarios for South Africa • Climate Change Implications for the Biodiversity Sector in South Africa • Climate Change Implications for Human Health in South Africa • Climate Change Implications for Marine Fisheries in South Africa
DRDLR	• National Rural Youth Service Corps (NARYSEC) programme.
Dept of health Stanford Clinic	• Provide health care

These policies, laws and strategies run on the same fundamental principle of integration and collaboration on all spheres to respond to a complex issue such as coastal risks. Despite the

many different policies and laws in place on all spheres of government, there is a lack of capacity to implement it, especially on the local level, and therefore unable to obtain optimal results.

CHAPTER FIVE: FINDINGS

5.1.Introduction

Buffeljagsbaai is a small "coloured" Afrikaans speaking community that is home to approximately 250 residents where both male and female residents are involved in small-scale fisheries (SSI-C, 2019). It is situated 199km away from Cape Town and roughly 38km from the nearby town, Gansbaai. The women in the community are involved in pioneering initiatives that enhance local livelihoods and build knowledge about securing fishing rights and broadening economic opportunities to help the community. The women attend various workshops organised by NGOs that build knowledge about their rights, alternative activities to generate an income, harvesting intertidal marine resources and improving markets for the community as well as the co-operatives (Aziz, 2017).

Marine resources are an important source of food and income for the community. However, despite the advent of democracy in 1994, and the promulgation of the Small-Scale Fisheries Policy of SA in 2012, the Buffeljagsbaai community faces many challenges with regards to access to marine resources, changing environmental and sea conditions, illegal harvesting of resources in the area, and the ongoing conflict over the security of tenure of their land which renders them vulnerable.

There are several local government institutions that have a management mandate within the area, and others that are responsible for service provision and disaster management in the area. Table 4 states the different institutions involved in the community as well as categories it into three types, governmental, private or non-governemental organisation (NGO).

Table 4: Names and nature of institutions involved in the Buffeljagsbaai Community (CFGD, 2019)

Governmental Institutions	**Private Company**	**NGO**
Department of Environment, Forestry and Fisheries (DEFF)	I&J (Fishing Company)	Masifundise
Department of Trade and Industry (DTI)	Buffeljagsbaai Abalone Farm (BAF)	Hermanus Rainbow Trust
Department of Rural Development and Land (DRDL)		ABALOBI
Overberg District Municipality (ODM)		
Overstrand Local Municipality (OLM)		

The study set out to understand how the different local institutions mentioned above were involved in Buffeljagsbaai, and to understand local perceptions about their usefulness in terms of assisting the community with coastal risks and livelihoods strategies. These issues were explored with the community and key informants during the data collection for the study.

The section below highlights the findings of this study with respect to the following themes: livelihood strategies employed by the community, their perceptions of livelihood threats linked to the environment and national resource availability, and their response to these threats and risks, community perceptions of the roles and responsibilities of institutions and lastly social challenges faced by the community.

5.2. Livelihoods strategies of the people in Buffeljagsbaai

One of the objectives of this study was to understand local livelihood strategies in Buffeljagsbaai. Findings revealed that the community has been living off the sea from when they first planted their roots in Buffeljagsbaai (Community focus group discussion (CFGD) and SSI-C, 2019). The findings from the Buffeljagsbaai CFGD indicated that marine resources are a primary source of food and employment in the community (CFGD, 2019). However, the community does participate in other livelihood strategies that are not marine- based.

Table 5 below is a timeline illustrating events and activities that contribute to the livelihoods of the community from the early 1970's to 2020.

Table 5: Updated timeline of the evolution of livelihoods in the Buffeljagsbaai Community (Aziz 2017; CFGD, 2019)

Mid to late 1970's	Harvesting of fish, abalone, seals, periwinkles. Collecting washed up kelp. Tea leaves Fynbos flowers
1994	DEFF distributed quotas to people of colour for the first time
1997	Fynbos flowers were harvested by the women of the community but had to come to an end as the owner of the flower farm moved away. A large fire destroyed the land where the flowers grew, also stopping the community from harvesting flowers.
2000	Only a few members from Buffeljagsbaai received community quotas. This caused friction and tension amongst the people and as a result, divided the community. Abalone poaching increased Subsistence permits were issued
2007/8	Some members of the community were given the IR
2009	The Department of Health funded the women of the community to market their home-made goods like sour fig jam and pickled periwinkles.
2011	Construction of the Abalone Farms
2017	Poultry farming Employment at the Abalone Farms
2018	Working with ABALOBI

The timeline demonstrates that the Buffeljagsbaai community has engaged in diverse livelihood strategies within the fisheries sector. Fishing was predominantly done by the men with the few exceptions of women involved in crayfish harvesting (fish species caught include, hottentot, yellow tail, cape salmon, shark, mackerel, Basa, Cape horse mackerel, sea robins, rooi Steenbras, South African mullet, sardines, red romans, silver fish, geelbek, kabeljou and snoek). The women of the community were involved in several other livelihood activities to help provide for their families such as processing fish, harvesting of intertidal species, pickling and making sour jam. The women were more active in the community in the sense that they frequently attend fisher rights workshops as well as skills workshops and have played an important role in establishing the Co-operative. The co-operative was established in 2012 and

is an business entity through which the community conducts their harvest and post-harvest activities (Further explained in section 5.4) in the hope that they can create opportunities for themselves and improve their standard of living.

Findings from this study revealed that there were significant differentiations when it came to livelihood activities between the women and men. The table below presents the gender dynamics of the various livelihoods in the community.

Table 6: Livelihood strategies carried out by gender

Livelihood Strategies	Females	Male
Offshore Fishing		X
Crayfish harvesting	X	X
Harvest Abalone		X
Working at the Abalone Farm	X	X
Chicken farms	X	X
Sell eggs to the local communities	X	X
Sell fish to local communities or in town	X	X
Work for ABALOBI	X	X
Harvest of alikreukel	X	
Pickle of alikreukel	X	
Collect dry kelp, crush and sell it	X	X
Harvest red bait	X	
Harvest worms and white mussels	X	
Make sour fig jam	X	
Sell and market of alikreukel and sour fig jam	X	
Process fish caught	X	X

The table reveals that the men are more involved in fishing at sea or harvesting crayfish and Abalone whereas the women have diversified livelihood strategies.

5.2.1. Harvesting marine resources in a fishing household (CFGD and SSI-C, 2019)

Every morning, if the weather conditions are perfect for fishing, the men would go out to sea with the hope of catching various species of fish that provide food for their families as well as generate an income through selling their catches to other buyers, factories, or restaurants. Fish that were caught by the fishermen is first processed and marketed by the fishermen's wives before it is sold. The CFGD and interviews revealed that men are mainly involved in fishing and women harvest marine resources on the rocky shores. Periwinkle is one of the marine species the women harvest on the rocky shores which they then pickled and sold at festivals or markets. Other marine species harvested along the rocky shores were red bait and worms which are used for bait, white mussels which is source of food or it is pickled and sold at markets. Kelp, a type of seaweed, is abundant on the Buffeljasgbaai rocky shores where the women of the community collect it, dry it out, crush it and transport it off to the abalone farm or other external buyers which then export the dried kelp, usually for cosmetic companies (SSI-C, 2019). A local female community member alluded to how important the sea is for everyone by stating "*The sea is the most important to the community because the fish, alikreukel, crayfish, kelp is all in the sea*" (SSI-C, 2019).

5.2.2. Diversified Livelihoods

The community is involved in other livelihood activities that are not marine-based such as harvesting sour figs to make jam and selling it at the local markets. The co-operatives organise ad hoc work for the community such as removing unwanted (alien) vegetation in the surrounding areas which is paid for by the government. There are seventeen members of the community which have a permit to farm with free range chickens and they sell the eggs at the Gansbaai markets (Aziz, 2017). Twenty-two members of the community work at the Buffeljagsbaai Abalone Farm (SSI-C, 2020).

Prior to the illegalisation of harvesting abalone, the Buffeljagsbaai community used to harvest abalones for their households or sell it. Poaching allows for large sums of money to be earned in a few hours as supposed to hours at sea without the guarantee of catching anything. This explains why many members of the community are involved in abalone "poaching"(SSI-C, 2020; SSI-C 2019). The topic of poaching will be further discussed in section 5.5.

It is evident that the Buffeljagsbaai community have over time diversified their livelihoods and the Co-ops play a vital role in providing employment to the community such as picking up litter or removing vegetation.

5.3. Livelihood threats linked to changing environmental conditions - Perceptions and Impacts

This study also sought to understand local perception of coastal-related risks on livelihood strategies over time. In the focus group discussion, the participants were asked whether they

noticed any coastal related changes, and they pointed out that over the past twenty years they have noted changes related to climate and fisheries that pose risks to their livelihoods.

The participants worked together in small groups to produce a timeline of key environmental changes or environmental hazardous events that occurred in the community which is displayed in the table below.

Table 7: Timeline of coastal changes and risks observed by the community over the past 20 years (CFGD, 2019)

Year	Coastal Changes and risks
2000	Notice the sea is higher on the beach
2002	Unusual hailstorm
2006	Flooding of the community caused by the high waves in a storm
2012	The wind became stronger
2013	Last time they caught Snoek
2014	Less red bait found
2015	
2016	Flooding event caused by high waves in storm Had to go deeper to get Alikrikeul No longer have certainty of what they might catch
2017	No sharks→ community believes the exsrinct species called Megalodon and killer whales are responsible for no sharks and less fish.
2018	Hailstorm
2019	Colder winters Very strong winds and storms

The timeline starts in the year 2000 because this is when the community started to notice changes and differences in the environment. In the 1980- 1990's the people in Buffeljagsbaai lived a very different life where they could go out to sea every day for a few hours and catch an abundance of various species of fish (CFGD and SSI-C, 2019). The fishermen were able to provide for their families almost every day without the worry of the community going hungry or fish would be scarce. The fishermen would go out to sea for a few hours and catch enough fish that they were able to dry them out in the road and store it. The fishermen were able to fish near the shore and did not have to search for fish or have a restriction to what they caught out at sea.

Interviews conducted with 10 fishermen of the community, highlight that fishing is not the same as it used to be 20 years ago. There are a lot of new challenges they must face in order to come home with fish. The fishermen observed that there is more mist in the morning making it challenging to navigate in the sea, the winds and currents are more unpredictable causing them to retreat but home, they have to travel further out to sea to catch fish and spending more hours at sea (SSI-C,2019)

There was general agreement amongst fishers interviewed that said that the winters have become colder (temperature) and harsher over the past few years (CFGD and SSI-C, 2019). There are stronger winds, higher tides which reach the backyards of many households and the worst case being the water reaching the roads and flooding the houses. These climate- related risks were collated with their impacts on the community and coping mechanisms towards it in the table below

Table 8: How the climate- related risks affect the community and their coping mechanisms (CFGD, 2019).

Climate related Risks	How it affects the community	Coping Mechanism
Flooding— Caused by rougher and higher seas	• This only happens in winter. • Only people that live closer to the shore are affected by the flooding • This damages property and furniture→ have to spend money to replace it. • Affects their health→ increases Tuberculosis (TB) or makes them more susceptible to TB	Fishers spray foam to seal their houses on the inside.
Colder Winters	• Lower temperatures and winters are getting worse • Stronger rainfalls→ leakages in the houses • Affects their health	No coping mechanisms to deal with colder winters
Rougher Sea	• Less fishing days → no income or food	Look for alternative livelihoods
Stronger winds	• Damages the roofs	Replaces the roofs every year
Less fish and changes in species distribution	• Uncertainty of what species will be caught or if they will catch any fish. Fishing is more difficult now→ resulting in poaching	Explore alternative Livelihoods No income for transport to work outside Buffeljagsbaai

The Buffeljagsbaai settlement is situated less than 80meters away from the ocean. Community members who attended the focus group discussions stated that the water level has risen over the years although not significantly and that their properties are now below the high water line and in the ocean. The community members stated that about every six years, there is a huge storm that brings very high tides and floods the community. Many members of the community built informal houses in their families' backyard. The floods damaged their properties and most of their belongings need to be replaced. A fisher-woman shared her experience about a time when the community was flooded and said "*The waves are very high, and this took a lot of furniture and houses out to sea. One night the man came knocking on our door for my husband to help him because his house was filled with water, the bed was floating the bathtub was pulled out to sea*" (SSI-C, 2019).

Flooding brought thick foam to the roads of the community as well as washed up blueblottles. The thickness of the foam made it difficult for the community to see the depth of the flooding (SSI-C, 2019). The community does not have significant measures to protect their homes when it comes to flooding from storms. The community sealed their houses with a sealant fume much like a foam however, it does not keep the water completely out(SSI-C, 2020). The water damaged their property and they had to use the little money they make from fishing to repair the damages. The flooding from the sea also affected the health of the community, including many of the members who had tuberculosis and other respiratory conditions. The community observed that the winter have become colder over the years and do not have the means to improve their homes. Futhermore, they did not have money for transport if they needed medical attention, let alone for the medication itself. For example, a fisherwoman said that when it was windy, they worried about whether or not their roofs would be able to sustain the strong winds; the wind damages their roofs and it needs to be replaced every year (CFGD, 2020).

The fishermen of the community said that there are fewer fishing days meaning the sea conditions were not safe to go fishing (SSI-C, 2019). There are more rough sea days which prevented the fishermen from going to sea because it was dangerous, which resulted in the fishermen sitting at home and not earning an income. During days when the sea was rough, some members of the community, mainly the women, relied on alternative livelihoods to generate income to contribute to their households' needs such as collecting and drying kelp, collecting and pickling alikreukel, making sour fig jam or some may look for work in Gansbaai. However, this income is not consistent and cannot sustain the family. Thus, in most cases if fishers cannot go out to sea, they do not have food or income for that day.

The most discussed change to their livelihoods noted by the community members was that fewer fish were being caught. They attributed this to changes in the environmental conditions at sea. One Fisherman pointed out that there was no certainty of what fish species they would catch at a given time and there was no guarantee they would catch any fish (SSI-C, 2020). The fishermen go out to sea at 6am and return at 5pm sometimes with only a few fish. For example, a fisherman spoke about catching only 3 fish on some days while another fisherman said he may be lucky to catch 5 fish, which was not profitable considering the amount of petrol used for a whole day of fishing (SSI-C, 2020). A few fishermen explained what fishing was like when they were younger and stated "*In the past we didn't have to go so far out for our fish.*

The fish used to be closer to shore, but now we must travel between three and five sea miles – sometimes eight to ten sea miles – before we can catch fish. This is very difficult for us because our petrol expense is increasing" (SSI-C, 2019).

As mentioned, the fishermen are now required to participate in other livelihoods activities to provide for their families, however this is not easy as there is not much work to do in the community and there are many restrictions where permits are concerned. The idea of finding work outside the community is not practical because the fishermen do not have enough petrol money to take them to the nearby town and back. Furthermore, the men resort to "poaching" as it is easy money and the community believes that the marine resources belong to them and do not see it as stealing from the sea.

Table 9: Rating[6] of coastal- related risks by the community (CFGD, 2019)

Coastal-related Risks	**Rating**
Flooding—Caused by high waves and storms	☹☹☹
Colder Winters	☹☹☹☹
Rougher Seas	☹☹☹☹☹☹
Stronger winds	☹☹☹☹☹
Less fish and changes in species distribution	☹☹☹☹☹☹☹

Flooding caused by high waves and storms was rated as an issue of concern but less important by comparison to the other risks, as indicated by the fewer sad faces in Table 9. The houses closest to the sea were most affected by flooding and would explain this lower rating since other climate related risks affect more members of the community. Flooding occurs every several years, but climate change could exacerbate the frequency and intensity of the flooding resulting in more houses being damaged and possible risks to life (CFGD, 2019). Although the flooding does pose a threat to the health and safety of the community, it is something they have become accustomed to and are largely able to respond to this hazard.

Colder winters were given four icons demonstrating concern and from the CFG it was not an important risk but does play a role in the well-being of the community. The community has

[6] Rating is a process whereby the community indicates the order of importance of things, in this case, they were asked to rate the level of impact of experience from coastal-related risks in the Buffeljagsbaai community. Happy face icons (☺) and sad face icons (☹) were used to rate the different coastal-related risks based on how severe it was to the community.

many people suffering from Tuberculosis (TB) and their conditions worsen during the winter times because of the colder temperature and the inability to stay warm and safe (CFGD, 2019). If a member were to get sick, it is a challenge for them to seek medical attention as they do not have the means to travel far to see a doctor or pay for the medication.

Rougher sea days were identified as the second most important risk faced by the community. The majority of the community depend on going out to sea and fishing to make a living. The number of rough sea days have increased over the past 20 years resulting in fewer days the fishermen can go out to sea. If the fishermen are unable to go out to sea, they are unable to generate income through selling the fish they caught or providing for their families. Most fishermen, if there is a rough sea, do not have alternative livelihoods and reside at home and a full day of fishing is gone to waste (CFGD and SSI-C, 2019).

Stronger winds were also identified as posing a risk to the community. The strong winds damage their roofs which must then be replaced at great cost. In most cases, the community members do the repairs themselves. The stronger winds affected the number of fishing days or resulted in fewer hours at sea. A fisherman's wife sympathized how difficult it was for her husband to work in such conditions and explained "*Like last week it was very strong winds and my husband was cutting kelp and (I) felt so sorry for him because the water level was up like 5 meters*." (SSI-C, 2019). Another fisherman alluded to how stronger winds affect his number of fishing days and said, *"The winds are unpredictable and, in the morning, it can be very windy but then at 12 there's no wind then we lose out on a fishing day."* (SSI-C, 2019).

The reduced catches at sea was rated as the most important risk the community faces. On good fishing days the fishermen would spend the whole day out at sea fishing (6am-5pm) and come home with fewer fish (SSI-C, 2020). The fishermen said that they cannot find certain species anymore, or some are much smaller compared to 10-20 years ago when they used to be larger. Also, they have to travel far out to sea to catch species that were once found nearer to shore. The fishermen said that they must travel up and down the coast looking for fish and this consumes all their petrol. Sometimes they return home with a handful of fish that is insufficient in generating enough income to cover the cost of petrol, or pay the fees for hiring boats, and pay the crew. A fisherman shared his own experience of the decrease in fish stocks and the state of the fishery saying *"Over the past 12 years I have noticed that our fishes are disappearing. We go out in the morning and we come back in the evening with only 10kg of fish or there is nothing on the boat……there was no mackerel caught the last 2 years. It's the season for a lot of fishing but there is nothing and we drive up and down looking for fish sometimes do 30knotmiles. If we don't catch fish, then how must we buy petrol for the boat or put food on the table*." (SSI-C, 2019).

Table 9 revealed that reduced catches and changes in species distribution was ranked the highest of all risks facing the community, indicating how important fishing is to the community. Furthermore, coastal-related risks have major impacts not only on the livelihoods of the community but their safety and health as well.

5.4.Community Perceptions of the Roles and Responsibilities of Institutions

Buffeljagsbaai is a small, isolated community and there are several institutions that influence local livelihood strategies as well as determine the community's resilience to coastal risks. During the time of this study, there are several government institutions that have responsibilities to resource management, service provision and disaster management in the community. These were explored with the community during the focus group discussions and further with key informants. These institutions include now Department of Environment, Forestry and Fisheries (DEFF), Department of Trade and Industry (DTI), Department of Rural Development and Land Reform (DRDLR), Overberg District Municipality (ODM), the Overstrand Local Municipality (OLM) of Greater Hermanus, Stanford Clinic. Other non-government institutions that play a role in the community and influence livelihoods are Buffeljagsbaai Abalone Farm (Viking Aquaculture), I&J which are private companies and, the Hermanus Rainbow Trust, Masifundise and ABALOBI which are non-governmental organisations (NGO's). There are also institutions in the community such as the co- operative Blinkwaters.

5.4.1. **Mandates of Institutions as stated in their operation documents**

Table 10 provides a list of the government institutions' mandates and what the community perceived is being done.

Table 10: Government institutions and their compliance to their mandates

Governmental Institutions	Mandate	What the community perceived is being done
ODM	Delivery of Basic Services such Disaster Management, Municipal Health Services	At the moment there is no support with coastal risks or the change in ocean conditions for SSF The clinic only visits the community once a month
OLM	Basic Service Delivery and infrastructure Public Participation	The road to the community has been gravel for years and will be tarred out due to the private abalone farm, (BAF) There are no primary or secondary schools The clinic only comes once a month to the community The community is waiting for the second phase of housing and no precautions are being done for coastal risks According to the community. The OLD does not interact with the community and does not know what is happening in the community.
DEFF	To ensure the right of citizens to an environment that is not harmful to their health or well-being Manage access to resources	According to the community, there is not enough attention focused on their well-being or on their health. The correlation between livelihood, health and well-being is not acknowledged There is more restrictions and limitation with resources then beneficial access to marine resources for the community
DRDL	Social and economic development of Rural communities	Initiation of poultry farming through equipping workshops for the women of the community to learn the necessary skills for chicken farming. Vegetable faming workshops The implementation of the National rural youth service corps (NARYSEC) programme

Table 11 lists the roles and responsibilities of the various NGOs and Private institutional actors involved in the Buffeljagsbaai community.

Table 11: Roles and responsibilities of the various institutional actors involved in the Bufflejagsbaai community

Hermanus Rainbow Trust	Provides social development services and support, to orphans, vulnerable woman and children, and disadvantaged families in impoverished communities.
Standford Clinic	Provide health care services
Masifundise	Seeks to empower SSF communities with the ability to build and strengthen their food security within a just socio-economic and political environment
ABALOBI	ABALOBI is a social enterprise that makes use of ICT and specifically ICT4Fisheries to better the lives of small-scale fishers in Southern Africa and beyond.
I@J	Ensures resources are sustainable contribute 1% of their pre-tax profit every year
BAF	Private Abalone Farm

The different governmental departments have a range of roles and responsibilities with regards to delivery services, coastal management, fisheries management and disaster risk reduction and management. What was evident from the interviews with government officials was the roles and responsibilities were compartmentalised, in other words there was a lack of connectivity between different roles and responsibilities and the lack of understanding of how each sub-department affects one another.

The different institutions involved in the community of Buffeljagsbaai were rated according to their relationship with the community. Happy icons and sad icons were used to represent the positive and negative activities of how involved the institutions were in the community(Five face icons being the highest rate). What is evident from this rating exercise is that the community views the governmental institutions in a negative light. Other institutions such as NGO's or actors that provide additional help to the community were viewed in a positive light.

5.4.2. **How Institutions and their roles are perceived at local levels**

Government Institution

The table below depicts the community's ratings on how involved the governmental intuitions are in assisting with adaptive strategies and livelihood strategies.

Table 12: Rating of the Government institutions by the community (CFGD, 2019)

Institution	Rating
Overberg District Municipality	☺☹☹☹☹
OLM (Gansbaai)	☹☹☹☹☹
DAFF	☺☹☹☹☹
DRDLR	☺☺☺☺
Stanford Clinic	☺☺☺☹

The ODM received 1 positive icon response for the houses they built for the community in 1997 and the rest (4 icons) showed dissatisfaction with the ODM performance because the community feels that municipality does not listen to them or cater for their needs for new infrastructure such as housing, roads, water supply and road lights (CFGD, 2019). In the Overberg Coastal Management Programme, it states that there is a growing demand for new housing within the municipality but unfortunately the demand is exceeding the supply. The ODM has projected an additional of 11 000 households need housing by 2031. The community feels as though the ODM does not communicate with them, however in the Municipality Systems Act there is a great emphasis placed on public participation and recognises that development is needed to improve the standard of living of the communities they serve. In an interview with a representative from the ODM, the respondent claimed that the ODM is aware of the coastal risks along the Overberg coasts such as flooding, wind-blown sand and coastal erosion which was identified by the Department of Environmental Affairs and Development Planning as part of the Setback Line Study (SSI-I, 2020). The ODM's approach in dealing with coastal risks is guided by the Coastal Setback line Study, Coastal Access study and the Coastal

Management Programme. The ODM has developed a Regional Economic Development Strategy which provides guidelines to improve and support the livelihoods of marginalized communities such as Buffeljagsbaai(SSI-I, 2020). The ODM representative did not provide sufficient information about their actual work in the community, however what was made clear is that the ODM does not interact or provide for the community directly but rather that the responsibility falls under the local municipality. Furthermore, the OLD is responsible for the implementation and provision of services to communities as well as the maintenance and improvements of infrastructures (SSI-I, 2020). It is important to note that the community is unsure of the roles and responsibilities of the district and local municipality.

The communities view of the support from the OLM was negative (5 icons demonstrating concern) because the OLM have not built formal houses for the community and many people still live in informal houses. The community says that they are required to make unreasonable payments for services including paying for water. They believe that there is no consideration of the plight of people in the community and that they do not have a stable income or receive low earnings (CFGD, 2019). There is some confusion amongst the community as to which local municipality they fall under and they often get "pushed between" the Municipality of Bredasdorp and Gansbaai. The community is unsure of who is responsible for which services and what support can be expected (CFGD,2019). The main responsibility of OLM is to provide basic needs and implement strategies or programs within their region. The OLM has not delivered on their promise of new housing to the community nor did they reconstruct the gravel road leading into the community. The community feels excluded when it comes to decisions concerning Buffeljagsbaai, as the OLM is aware of the climate-related risks faced in Buffeljagsbaai. They are aware of the proposals to build new housing for the community in a different town closer to Gansbaai. The community was not included in this decision and feels that the OLM did not consider their cultural heritage and attachment to the area, despite NEMA stating that development must be socially, environmentally and economically sustainable and avoid cultural heritage disturbances. The OLM is aware of the climate-related risks in the Overstand region and state that their responses are guided by the CMP, CML, CAS and the Overberg Climate Change Response Framework (OCCPF) (SSI-I, 2020). In the OCCPF, it outlines various procedures in which the municipality can respond to climate-related risk, however some of the responses are beyond the municipalities mandate and they need assistance from national government, the private sector and NGO's to respond appropriately. One of the responses to extreme weather events is to replace damaged infrastructure or upgrade the infrastructure to withstand extreme weather events. The OCCRF confirms that in the Overberg district, line fish stocks have declined substantially over the past century especially reef species such as Red Roman, Steenbras and Seventy-Four which is rarely seen in present catches, as well as species distribution being affect by changes in water temperature and colder currents in the area. There is no current program or strategy to assist coastal communities such as Buffeljagsbaai who are facing hardships due to the decrease in reef species.

Lastly, one of the most serious challenges the community is facing is unemployment. There are no facilities (primary or secondary schools, clinics, supermarkets etc) in the community and they must travel to Gansbaai in search of work. This is a problem for the community as

they do not have the means to travel to other towns to seek work, the income they generate from fishing activities is used for food and fishing activities (CFGD and SSI-C, 2019). The community revealed that if work is needed in the community such as removal of litter, the OLM does not employ members from the community. There is, however, the Overberg Regional Economic Development Strategy and Tourism Strategy which is supposed to guide long term sustainable planning and development of the Overberg's regional economy to lead to inclusive growth for all within the region. However, the community says that the OLM has not helped them in any way (CFGD, 2019).

The overall view of DEFF is negative and only positive rating was about the allocation of IR (one happy icon) which has given fishing communities access to marine resources to a limited extent. Fishers were unhappy with DEFF on the account of reduced quotas on certain species and additional management restrictions on line fish. There is little to no communication between the DEFF and the community, despite one of NEMA's principles being public participation of all parties especially the most vulnerable. The fishermen say that at times, DEFF gives a permit for selected species but do not do research as to whether that marine resource is available in their area (SSI-C, 2020). Therefore, there is a lack of information within DEFF about fishing areas and what resources occur in the area, when issuing permits to communities. The permits are expensive, and fishermen aren't guaranteed to catch enough fish to support their households and their expenses, they complain that there is no financial assistance from government to help them cope when less fish is caught out at sea. The fishermen say that the permits only allow them to go out to sea during the week and not over the weekends (SSI-C, 2019) which contradicts NEMA on the basis that marine resources must be accessible to meet basic needs. Although, the women of the community have alternative livelihoods to generate an income, it is not sufficient to solely support their households; and the restrictions of only being allowed to fish on weekdays, makes it difficult to provide for their families.

While DEFF is aware of coastal risks in the Overberg Region, they do not know about the coastal risks facing the Buffeljagsbaai community. A representative from DEFF expressed that government departments have their role to play in making communities more resilient to coastal risks and reduce the impacts that communities are exposed to. A DEFF Representative stated *" I think the communities are the ones that are exposed and know exactly what normally happens but partnerships between us, the department and the community, will go a long way… and also from our side as regulators that we can do or change and regulate it and ensure that there is less impact and risks that they are exposed too."* (SSI-I, 2020).

The DEFF confirmed that many fishing communities have been complaining about the trawlers offshore catching all the fish and making it hard for them to find fish (SSI-I, 2020). The DEFF does not have a concrete answer to whether trawlers are contributing to reduced catches for the local fishers from Buffeljagsbaai or whether reduced catches may be because of climate change but explained "*There is also competition between the offshore boats that are catching in the nearshore and when the smaller boats go out there's no longer fish. This is something government needs to manage, we must look at the impacts of fishing - fisheries management is basically about managing people who depend on fish. So as soon as they indicate to us that*

there's this particular impact, it's our responsibility to investigate and find out if it is indeed the case and if it is the case, how do we resolve the case. At this point in time there has not been any concrete response to say trawling has been affecting fishing communities in the particular way and this is what we are doing as a department at this point in time." (SSI-I, 2020).

The DEFF representative said that it is difficult for fishing communities to have a unified voice because the SSFP and the amendments to MLRA and regulations have only recently been implemented. There are high hopes as the DEFF is moving towards implementing the SSFP which will allow the Departments to manage fishing communities better (SSI-I, 2020).

The DEFF have partnered up with a number of organisations on projects dealing with climate change and resilience, however the pilot project is not in Buffeljagsbaai. DEFF have partnered with ABALOBI focusing on the quality of fish instead of quantity and how to make profit from fish species with little value or are uncommon. The DEFF representative said that the SSFP will address climate-related issues, livelihood vulnerability faced by fishing communities and compensation (SSI-I, 2020). The SSFP brings hope and a sense of revolution in the SSF sector and the DEFF representative is confident that the SSFP will change the lives of fishing communities if there is a mentorship program that runs for 3- 5years which will provide capacitation, training and mentorship (SSI-I, 2020). These programs are vital for the success of fishing communities past the 5-year mark and ensure that they are economically viable.

The perception of the community towards DRDLR is generally positive (4 happy icons) because they started the poultry farming workshops in Buffeljagsbaai to teach the women the necessary knowledge and skills of chicken farming. The DRDLR provided chickens, cages, and six months of food worth of food for chicken (SSI-C, 2019). Women would sell their free-range eggs to surrounds towns or markets and have another source of income. The DRDLR ran a workshop in the community about growing and managing vegetable gardens and in doing so provided the community with knowledge on how to grow their own vegetables which many now sell at local markets. One of the fishing households received a boat from the DRDLR (CFGD and SSI-C, 2019). The youth of the community took part in the NARYSEC programme in 2019, which is a youth skill development and employment programme which transforms youth from rural areas, from being job seekers to job creators, breaking the vicious cycle of unemployment and reliance on social grants (CFGD, 2019).

Standford Clinic was positively viewed because they visit the community once a month and provide health care to the community. The community gave Standford Clinic one sad face because they would like the Clinic to make more frequent visits as the town is far for them to travel and some community members cannot afford medication (CFGD, 2019).

Private Institutions

The table below depicts the community's ratings on how involved the Private intuitions are in assisting with adaptive strategies and livelihood strategies.

Table 13: Rating of the Private Institutions by the community(CFGD, 2019)

Institutions	Rating
I&J	☺☺☺
Buffeljags Abalone Farm	☺☹☹☹

I&J, a fishing company, received 3 positive icons because, they work with members of the community and built the creche for the community. The community says that I&J is eager to help the community, however the community needs to come with an initiative and provide a step by step plan explaining how they are going to maintain their initiatives (CFGD, 2019). I&J have transferred their responsibility of the creche over to the BAF (SSI-I, 2020).

The BAF is an abalone farm that is situated behind the community of Buffeljagsbaai and was established in 2010. The BAF received one happy because they provide employment to some members of the community. The Abalone Farm received 3 icon demonstrating concern because, the community feels like the people who work there are expendable and are hired and fired as they please (CFGD, 2019). The community feels that the Abalone Farm should employ their people and not outsiders because the farm is situated at their doorstep. The community was not supportive of the Buffeljagsbaai Abalone project , because of the controversy on how they obtained the land. The community says that the owners of the abalone project did not approach them or have any other interaction with the community apart from employing a few members (CFGD, 2019). However, after speaking to a representative from the Buffeljagsbaai Abalone Farm, they claim to have had multiple committee meetings with the community. The BAF says there is a lot of conflict within the community making it difficult to work with them (SSI-I, 2020). The community complained that the BAF took their land and does not help the community, however according to the BAF they provided food and clothing to the families whose houses burnt down, the gravel road is being tarred for the BAF which directly benefits the community, the BAF attempted to organise transport for the school children in the community as well as discussed building a sports field (SSI-I, 2020). The BAF believes that the Buffeljagsbaai community is neglected by the district and local municipality because more attention is given to other settlements closer to Gansbaai such as Masakhane(SSI-I, 2020).

Non- Government Organisations

The table below depicts the community's ratings on how involved the non- governmental intuitions are in assisting with adaptive strategies and livelihood strategies.

Table 14: Rating of the Non- Governmental institutions by the community (CFGD, 2019)

Institutions	Rating
Hermanus Rainbow Trust	☺☺☺
Masifundise Development Trust	☺☺☺☺☺
ABALOBI ICT4 Fisheries NPO	☺☺☺☺☺☺☺

The Hermanus Rainbow Trust is a non-profitable organization, it was established in the response to the severe conditions in which children were being brought up in poor vulnerable communities. The Hermanus Rainbow Trust was viewed positively by the community (five positive icons) because they provide food parcels to a few houses in the community (10- 12 houses). The community appreciates their work, however, wishes they could deliver parcels more often (CFGD, 2019).

Masifundise Development Trust is an NGO that seeks to empower SSF communities with the ability to build and strengthen their food security within a just socio-economic and political environment. Masifundise registered itself as an independent trust to support SSF communities in mobilizing, lobbying and advocating for legal recognition and sustainable development. The community was positive about the input and support from Masifundise (five positive icons) because they have been very involved in the community, supporting fishers claiming their rights and providing training workshops for the women in the community (CFGD, 2019). However, the community claim that Masifundise had not been very active on the ground in recent years as they have shifted their focus to food security(CFGD, 2019).

ABALOBI ICT4 Fisheries NPO (ABALOBI) is non-for profit organization that has developed a mobile app suite and program aimed at social justice and poverty alleviation in SSF communities; transforming the way we produce knowledge, stewardship of marine resources and building resilience despite climate change (SSI-I, 2020). ABALOBI provides a transdisciplinary platform that brings together institutions and traditional fishers. The app allows fishermen to document their catches and keep track of their sales (SSI-I, 2020). ABALOBI is viewed very favorably by respondents (seven happy icons) because they have improved the livelihoods of fishing communities. The fishermen inform ABALOBI when they go out to sea. The community would usually get paid “the bare minimum” for their fish, R10-R20 per kg of fish (SSI-C, 2019) but ABALOBI pays R60 per kg of fish (SSI-C and CFGD, 2019). ABALOBI employs the community to clean the fish after it has been caught allowing women to earn an income. The community must log their catch on the ABALOBI platform and it is sold to different buyers (SSI-C, 2019). ABALOBI provides the fishermen with eco-friendly cleaning supplies for their cooler boxes where the fish is stored when they are at sea. ABALOBI supports fishermen as well as the women with the ABALOBI’s Women in fisheries

Project that allows fisherwomen to place home-made food items like pickled fish, seaweed salt, sour fig jam on the ABALOBI pantry (SSI-I, 2020). Fisherwomen have the opportunity to make and supply their traditional products to restaurant supported fisheries via the ABALOBI pantry.

Co- operatives

There are three co-operatives in Buffeljagsbaai, all established and registered in 2012. Each co-operative consists of six to ten members from the community (Aziz, 2017). The community decides who will be in what co-op. There are three Co-ops in the community but only one is active namely the Blinkwaters, one of the other Co-ops mention in the CFGD was Blouwaters. The Co-ops are recognized as a small business body that assists the community finds small work opportunities such as clearing of alien vegetation, waste removal, or selling homemade products at events. The Co-op must have a bank account holding a certain amount of cash to remain active. The co-operatives in the community do not exclude members that are not part of the co-operative or belonging to another. The chairmen of the Blinkwaters Co-op are considering making their co-op the primary co-op in the community. The primary co-op act as an umbrella or overarching structure that will oversee all the activities carried by the other co-ops in the community(Aziz, 2017). Currently, the Blinkwaters Co-op is doing a pilot project with ABALOBI. Furthermore, Co-ops could be seen as a promising structure that uplift communities through providing skills and employment as well as provide a platform for networking and growth.

5.5. Social Challenges

The main aim of this research project was to determine whether climate change and coastal risks were prevalent in the Buffeljagsbaai community as well as understand the extent to which the relevant institutions engaged with issues of coastal risks. However, the community could not separate other issues from climate change but rather how it all linked to their daily lives. Therefore, these issues could not be ignored as it was an important part to understanding the community. The other social challenges facing the community will be presented and discussed in this section.

5.5.1. *Restrictions and Permits*

There are several permits that exist in the community this includes the recreational permits, community permit for crayfish, and the IR quota for numerous marine species including crayfish, white mussel, line fish, and redbait (Aziz, 2017). The IR has had a positive impact on the lives of fishers in Buffeljagsbaai through improving their livelihoods. The IR is free to the community and allows the community to make a living off marine resources by allowing more species to be caught (Aziz, 2017).

The community of Buffeljagsbaai is required to purchase a recreational permit of R180 to harvest periwinkles, despite being very abundant on the rocky shores of Buffeljagsbaai. The permit only allows for 5 alikreukel to be harvested per person per day and selling the catch is not allowed (Aziz, 2017). Another resource that is abundant in Buffeljagsbaai is abalone and

kelp. However, only 12 members of the community hold quotas for abalone (SSI-C). Although conditions regarding permits have improved since 1994, it however still limits and restricts the community to selling and marketing of marine resources that are caught under a recreational permit. For example, recreational permits are limited to only 5 periwinkles per day which is insufficient to generate enough income to make a living from it. There are many opportunities for the women of Bufflejgabaai to generate an income that is lucrative enough to help provide for her family, this includes selling pickled periwinkles and sour fig jam. Unfortunately, the recreational permits do not allow the marketing or selling of resources (Aziz, 2017; SSI-C and CFGD, 2019). Nonetheless, the community still harvests periwinkles, pickles them, and sells them at festivals or events.

Another challenge fishermen face with regards to permits are, of fish limited to specific species, size and so forth. A fisherman stated *"If you catch a fish from 45m deep, it dies by the time it reaches the surface. If it is undersized, you either leave it there to float or you bring it home for bait and risk a R2500 fine."* (SSI-C, 2019).

Fishermen have complained that they are given permits for certain species and in most cases those marine species are not found in that area and have to travel far to harvest it, risking the chance of being fined for fishing outside their designated areas as well as spending a lot of money on petrol (SSI-C, 2019). The fishermen expressed, *" The state tells you, you can take out white mussels from the ocean but they didn't check if there is white mussels in the area and if they checked they would know that we do not have white mussels. Why would you sit with a right that you cannot use or exploit? For us to utilize that right we have to go to Standford, the cost in terms of transport is more than the money you make from harvesting mussels"* (SSI-C, 2020).

Lastly, the permits only allow the fishermen to go out to sea during the week and are prohibited from fishing on the weekends as well as prohibits the permit holder to have any other permanent employment. This places community members at a loss by limiting the amount of days they can fish and earning a decent living. The fishermen of the community alluded to how they cannot be the reason for the fish stock declining and stated *"We are traditional fishermen, we go out to sea with small boats with a 10-12 man crew. We catch fish with fishing rods. We cannot strip the ocean of fish, we do not catch a lot."* (SSI-C, 2019).

5.5.2. ***Unemployment***

Buffeljagsbaai is a fishing community and majority of the members depend on marine resources as a source of food and income. Fishing is a high-risk occupation and the fishermen risk their lives every time they head out to sea (Aziz, 2017). The weather conditions are unpredictable and can change drastically when they are out at sea forcing the fishermen to return home for their safety (SSI-C, 2019). The fishermen's time out at sea has been cut short and, in most instances, they come home with very few fish or no fish and not make ends meet. With weather conditions becoming more unpredictable and intense, the fishermen's days at sea are limited. Not every day is a fishing and, on those days, whereby the winds are too rough, or

swells are too high, the fishermen cannot go out to sea and end up sitting at home with no means of earning income or providing for the family. The fishermen in Buffeljagsbaai say that they go without fishing for months because of the weather and in that time they are unemployed. Unemployment is the biggest challenge the community faces (CFGD and SSI-C, 2019). Another issue that cause fishermen to be unemployed is the large amount of restrictions when it comes to fishing. The fishermen are restricted from catching certain species, certain sizes as well as being restricted to only fish during the week (SSI-C, 2019). In addition, a fisherman in Buffeljagsbaai said that to have a permit to fish means that they are unable to have any form of a permanent job. These are all factors that leave many of the fishermen unemployed and struggling to make a living.

The Buffeljagsbaai community is situated far from the nearest town, Gansbaai. There are limited job opportunities in the community including being a fisherman or working for the Abalone Farms. As mentioned above, fishermen struggle to make a living solely off fishing; the people who work at the abalone farm complain they do not get paid enough money to sustain themselves and are seen as expendables. Only twenty-two people in the community work at the abalone farm (SSI-C, 2019). The other option the community has is to find work in Gansbaai, however the town is situated very far away and many of the community members do have transport or do not have petrol money to go to and from. In the CFGD, the women expressed that it is not worth it to work in town because all the money you earn is used for transportation or petrol.

In the CFGD, the women explained that the kelp harvested is shipped overseas to make beauty products but when the products are imported back to SA it is marketed at high prices. The community expressed that it is their resources and could be doing the same if SA were to open a factory that manufactures seaweed beauty products. It could involve the community through the entire process, providing jobs for the community, and improving the standard of living for the community.

The Buffeljagsbaai has a reach history of fishing and harvesting of marine resources, however now they are restricted from enjoying the resources they were once freely allowed to harvest. Thus, making it impossible for the community to survive on legal terms and resulting to "poaching".

5.5.3. ***Poaching***

Buffeljagsbaai has a rich heritage of abalone diving before the allocation of the quotas. The community reduced their diving for abalone and tried following the new legislations, however fishing become less fruitful, unemployment increased and the pressure to support their family become the main priority. The majority community harvest abalone for their homes and guests and make art pieces with its shell which is then sold at local markets. A fisherwoman in the community stated *"There is a few people that do poaching, and you can't blame them because they need to make living, they need to look after their children. How must we make a living with such difficult environment?"* (SSI-C, 2019). A few fishermen from the Buffeljagsbaai community explained the dynamics behind poaching and said "*Abalone is our richest resource*

but only 12 people have quotas. The other fishermen can just watch that is the reason why they poach because people need to provide for their family. People label Buffeljagsbaai as a poaching hotspot but we are traditional fishermen and has been that way since we were young…..poaching is the result of unemployment; people don't have work. They started to see as the sea as the way of creating income. The topic on poaching is a sensitive one because it hits differently to different people. I might see poaching as traditional fishing and goes out to sea gets his hands wet and goes through all the challenges of the sea. Some people see it as out right illegal and this debate has been going on for many years." (SSI-C, 2020).

The community feels that they have some ownership of the marine resources as the community have been harvesting from the ocean since the beginning. The community does not consider poaching a bad thing when it is to provide for the family and being able to make day by day (SSI-C, 2020). However, there are many outside gangs that come into the community and poach abalone. The community says that many of their youth are leaving school and joining the poaching gangs (CFGD, 2019). The community also perceives that poaching abalone has promoted alcohol and drugs abuse in the community because of the large sum of money associated with it in a day's work. Majority of the poachers are outsiders and not from the community but from surrounding areas and only a handful of people in the community are with the gangs. One fisherman said that poaching is decreasing the people's value for the community by allowing the youth to drop out of school and become addicted to drugs and alcohol (SSI-C, 2020; SSI-C, 2019).

The various institutions involved in the community have acknowledged that poaching is a serious issue in the community. The DEFF representative commented on the poaching occurring in Buffeljagsbaai and said it is a serious and sensitive topic for the community as well as the Department of fisheries (SSI-I, 2020). In his opinion, the issue of poaching is a national crisis because it echoes the national challenge of unemployment, levels of criminality and organised crime (SSI-I,2020). He believes that fishing communities can go a long way preventing poaching and that DEFF need to consider allocating resources adjacent to the communities so that they can protect the resources better. He believes if the community is given access, authority over their marine resources, the levels of poaching will decrease and increase the protection of marine ecosystems. The DEFF Representative explained "*one of the things we need to consider is to allocate some of the resources adjacent to where they are staying so that they can better protect that resources. In some instances, you'll find out that people poach because they don't have any legal access and then labelled as poachers*." (SSI-I, 2020).

ABALOBI works very closely to the community and in different fishing communities and are aware of poaching and the serious consequences it has on the community. A representative from ABALOBI commented that poaching in Buffeljagsbaai is complicated as this community has been harvesting abalone and formed an important part of their diet before the quotas were allocated (SSI-I, 2020). Poaching gangs from outside of Buffeljagsbaai and organised crime sees the community as a soft target. If any fishermen in the community that choose to take abalone home as a meal is immediately considered a poacher and all the negative connotation that goes with it. In contrast, the ODM was more punitive towards poaching in the community and expressed that although they do not deal with poaching issues, they do not stand for such

illegal activities (SSI-I, 2020). In reality, the community has a complex relationship with the idea of poaching. Some members are actively participating in poaching and others may sympathetic to this activity as they understand how the struggle to provide for their families. However, majority of the community do not support outside poaching gangs coming into the community as with these gangs comes violence, abuse of alcohol, drugs, school dropouts and a bad reputation associated with the community. There is little to no action being taken by authorities to address the poaching gangs in the community (Aziz, 2017).

5.5.4. ***Social Relationships***

There seems to be some dispute over the land in which the two abalone farms are situated. The second Abalone Farm known as HIK is situated before the open harbour and was built on land that was once promised to the community for a church. Information gathered from the CGFD, the paster bought the land intending to build a church but then sold the land to the abalone farm. The community claim that the Queen Victoria of England gave the land to the Buffeljagsbaai community. However, the community is no longer in possession of this document and was last with a member of the community who later moved out of the area. The BAF is aware that the Buffeljagsbaai community was given their land by the Queen and that the history is documented in the museum in Bredasdorp (SSI-I, 2020) Although Buffeljagsbaai is small, the community does not know the boundaries of their area. This makes Buffeljagsbaai an easy target for outsiders to infiltrate and construct developments near the community. In 2000, I&J provided a large amount of funding to the community to initiate a sustainable livelihood project that taught the women skills to diversify their livelihoods. A section of land between the camping and HIK farm was reserved for this program that would have been active for 38 years. Unfortunately, the program only ran for a few years and the remaining funding and land were lost and the community does not know what happened to it.

Another issue that surfaced during interviews with the community and institutions was the conflict within the community. There were two families that first came to Buffeljagsbaai who have debated that the marine resources belong to them, thus creating a division in the community. The BAF mentioned that there were three families that do not agree with one another making it hard to come to an agreement on the way forward with community (SSI-I, 2020). Apart from the historical separation, the community is divided through the interaction of the different institutions. When outside institutions interact with the community, they only interact with certain people of the community making other members feel excluded, thus creating further divisions within the community.

5.6.Conclusion

The findings of this research revealed two key themes, the first relates to the adaptive strategies used by marginalized communities for coastal-related risks. It was evident that coastal threats have had a significant impact on the community of Buffeljagsbaai. This is to be expected as

coastal regions are extremely dynamic in nature and are the first to feel the impacts of climate change. Coastal- related risks have directly affected the community's health and livelihoods. What emerged from interaction and observing the community was that the community found ways to weave their livelihoods around climate change and adapt in their own ways.

The second theme that emerged was the lack of presence of governmental intuitions in the community. Although government institutions that had a mandate to support the Buffeljagsbaai community, claimed to serve local communities with a wide range of livelihood support functions, these roles were not translating into action at community level. Instead, the community perceived that these institutions hindered their efforts to enhance livelihoods, instead of enabling them. Government institutional actors involved in the community have specific strategies and programs in place that require them to assist coastal communities adapt to climate change and coastal risks. However, these programs and strategies have not been implemented effectively. What emerged from interviews with institutions, was the very sectoral approach and narrow lens adopted by government in their understanding of the local community context, the complex livelihood strategies employed, the risks facing the community due to climate-induced change and the support needed in order to build resilience.

CHAPTER SIX: DISCUSSION

6.1. Introduction

In this chapter, the two major themes that emerged from the findings will be discussed. The first theme relates to the strategies used by marginalized coastal communities like Buffeljagsbaai to adapt to coastal-related risks. Coastal-related risks pose a great threat to development and poses an even greater threat to vulnerable communities that reside on the coast (Cinner et al., 2012). The second theme emerging from this study related to the issue around the lack of presence of governmental institutions. Government institutions such as the municipalities and different departments, play an important role in enabling (or hindering) the livelihoods of coastal communities (Scoones, 2015), and their input and support can shape societal behaviour with regards to natural resources use (Cleaver, 2000). What seems to be a recurring problem of governmental institutions at all levels, is that their roles and responsibilities are poorly defined, and it is sometimes difficult to determine which institutions have jurisdiction over the coastal region and the various activities taking place in this zone. Non-government institutions have an important role to play in supporting rural coastal communities since they often have a better grasp of local challenges and have developed relationships of trust with local communities.

6.2. Adapting to Coastal-Related Risks.

6.2.1. Coastal-Related Risks and Coastal Communities

Over the years, the Buffeljagsbaai community has found ways to adapt to coastal-related risks by means of diversifying their livelihoods. This reduces vulnerability in a community and risks of livelihood failures (Allison et al., 2012; Allison and Ellis 2001; Alemu, 2012). The community may have diversified livelihoods but are still suspectable of being vulnerable to risks. The community still faces challenges associated with climate change, social division and corruption in the community (to name but a few) (Aziz, 2017). Other challenges at local level include the lack of basic service provision and infrastructure and access to fishing rights. The lack of basic facilities such electricity, water, housing and medical facilities affects a communities' ability to cope with risks and emphasizes the marginalization of poor coastal communities.

Various bodies of literature describe the effects of climate related risks in developed regions such as cities and explore mitigation and adaption strategies used in these context (Horton et al., 2015; Huong and Pathriana, 2013; Grasper et al., 2011; McCarthy et al., 2010). However, the effects of climate related risks in rural and smaller coastal communities are poorly documented because more attention is focused on large cities or more developed regions, and consequently, knowledge about adaptation responses and capacity of marginalize rural coastal communities is limited (Allison et al., 2012; Raleigh, 2010; Pomeroy et al., 2006).

Poor coastal communities contribute very little towards climate change but are the most vulnerable and are largely unable to adapt to the rising frequency and severity of extreme

weather events (Cinner et al., 2012). A study done by Zsamboky et al. (2011) explains that coastal communities are more vulnerable to climate change than those living in other areas because, in conjunction with changes in temperature, precipitation and flooding, coastal communities are affected by sea-level rise which cause extreme events like storm surges. In Buffeljagsbaai, exposure to storm events as well as the effects of fewer fishing days and changes in species distribution and abundance, have had a direct impact on every aspect of this fishing community's life including their health and safety, financial status, relationships, employment status and income level, further affecting their vulnerability.

Coastal risks that are climate change induced create major challenges for coastal communities and managers in coastal regions because of the impact on marine ecosystems, fisheries, and especially the livelihoods of rural coastal communities (Alemu, 2012; Allison and Ellis, 2001; Scoones, 2015; Mcllgorm et al., 2010; McClanahan et al., 2009, 2015; Cheung et al., 2010; Pendleton et al., 2016). Small-scale fishing communities are usually extremely vulnerable to changes in the marine ecosystem as they solely depend on marine resources (Béné et al., 2010). Climaterelated risks may present challenges that are in addition to the high levels of poverty, food insecurity and unemployment often experienced in small- scale fishing communities in South Africa (Sowman et al., 2014; Clark et al., 2002).

The fragile livelihood circumstances in coastal fishing communities is created by systems of resource allocation often failing to support local livelihoods, which undermines human security and does not produce favorable outcomes between the community and the resources (Bennett et al., 2015). These systems of allocation have control over who has access to what resources and defines what and how much marine resources may be harvested and by whom (Bennett et al., 2018). This corresponds to the situation in Buffeljagsbaai where the community have experienced an ongoing struggle with securing their rights of access to marine resources and obtaining permits which reduces their ability to cope with climate related risks. As a result, the community resorts to illegal fishing or "poaching". Poaching not only has an impact on the marine ecosystem but also brings about alcohol and drug addictions amongst the youth. Furthermore, the project was set out to focus on climate change but discovered that climate change is one of several risks and exacerbate other risks (SSI-C, 2019; CFGD, 2019).

6.2.2. Diversification of Livelihoods as a form of Adaptation

The livelihoods of Small-scale fishing communities face numerous barriers to adaptation to climate related risks (Monirul Islam et al., 2014). These barriers may include, rougher sea days, changes in the distribution and abundance of fish species, restrictions on access to fishing rights, lack of equipment and restrictions of permits. The Buffeljagsbaai community has diversified their livelihoods over the past decade. However, their adaptation strategies have not been as a direct response to climate change and coastal flooding, but rather because fishing is an unpredictable and high-risk occupation and they have been unable to rely on fishing alone to sustain their livelihoods for many years. Diverse livelihoods are essential attributes for managing risks, poverty reduction in small-scale fishing communities and it increases the adaptive capacity to future risks affecting fishers livelihoods strategies (Béné and Friend, 2011).

In the Buffeljagsbaai community, there was a distinct gender division of labor when it came to livelihoods. This corresponds to studies done by Kwok et al (2020), Salmi and Sonck-Rautio (2018), Kleiber et al (2014); where men were mostly responsible for offshore boat fishing and women were involved in near-shore gleaning for intertidal species or processing fish. The role and contribution of women in various communities are often overlooked in society; one explanation for this could be that the men often have a lower opinion of what women are contributing, as gleaming and post- harvest activities are not considered fishing (Kleiber et al., 2014; Kwok et al., 2020; Salmi and Sonck-Rautio, 2018). Off-shore fishing is considered a high-risk occupation and may be life threatening which is one of the reasons why the men go out to see whereas the women prefer local harvesting that can be done closer to home and enable them to take care of the house and children (Kleiber et al., 2014; Kwok et al., 2020; Salmi and Sonck-Rautio, 2018).

It is important for a fishing community to have diversified livelihoods as it helps the community become more resilient to various stressors including climate change and enables them to adapt to change. A household that engages in a diverse suite of livelihood strategies will benefit them in the long run by increasing livelihood security and reduce vulnerabilities caused by risk uncertainties. In addition, it allows the community to have a source of income to provide for their families (Allison et al.,2012; Allison and Ellis 2001; Allison and Horemans, 2006; Alemu, 2012). As previously mentioned, the gender division of labor indicates men mainly being involved in offshore fishing whereas women are engaged in a more diversified suite of more livelihood's activities. The diversification of women's livelihoods makes them less vulnerable than fishermen who go out to sea every day therefore making women more resilient to change. This resonates with findings in the community of Buffeljagsbaai: if it is a rough sea day, the men would stay at home whereas the women had other activities to do such as pickling shellfish or making jam or working in their co-operative (SSI-C, 2019 and 2020).

While the community has diversified their livelihoods, there are other factors that provide obstacles to adapting to coastal and climate related risks which causes the community to resort to illegal fishing or "poaching".

6.2.3. Poaching

A problem that results from restriction of access to marine resources and poverty is "poaching" which Pomeroy et al., (2006) explains as a result of a community needing to resort to illegal activities as a way of coping with vulnerable times. Another view on "poaching" in small scale fisheries, is that it is been used as a tool of resistance to express fishers' discontent with the current fishing allocation system (Iscaacs and Witbooi, 2019; Lambrechts and Goga, 2016). Some fishermen believed that if they were fishing illegally, it should be to provide for their families and not to make "quick money" because illegal activities paint the communities involved in these activities in a negative light (Lambrechts and Goga, 2016). Often poaching involves outsides or authority figures that intrude into communities, targeting high value resources such as abalone for large sums of money. The problem with addressing poaching is that communities are aware of who is involved in these activities but are afraid to come forward

with the information as they fear these perpetrators will cause them harm (Isaacs and Witbooi, 2019). This corresponds to the poaching in the Buffeljagsbaai community. The community members are aware of what institutions are involved in the poaching gangs and do not come forward in fear the perpetrators might make things challenging for them.

According to Ruddle (1993), the pressures on small-scale fisheries are the commercialization of resources which are linked to external markets, thus changing the perception of marine resources in fishing communities. External institutions involved in a community is usually exclusive to the local 'elites' and depreciates the moral integrity and social cohesion of a community (Ruddle, 1993). This resonates with the community of Buffeljagsbaai, where members who belong to abalone poaching gangs and generated large amounts of money in a day's work. The income from these activities was much more than the earning of a fisherman in a typical month. Some community members would trade their morals for quick lucrative wages by providing information about their community to other institutions. In the case of Buffeljagsbaai, the community indicated that government authorities were allegedly involved with the poaching gangs and often had community members that inform them about the happenings in the community (Aziz, 2017; SSI-C, 2019). This is a representation of individuals having no regard for their fellow community members and profit at the expense of "local social equity" which further undermines and destroys the local structures (Ruddle, 1993). In response to the infiltration of outsiders into the Buffeljagsbaai community and the involvement of certain elites within the community in these illegal activities, a social division is created within the community. Furthermore, fishing communities are not immune to external pressures that drive larger polities that undermine the community.

Abalone plays a key role in marine ecosystems and the decline in the abalone population would alter the marine environment. Not only does abalone poaching affect the marine ecosystems but, also creates social difficulties (Hauck and Sweijd, 1999). The coastal area in front of Buffeljagsbaai is rich in abalone. This has attracted a large number of abalone gangs which enter the community to harvest abalone which was observed during a field visit (Aziz, 2017). Findings from the community focus group discussion and interviews revealed that a few members of community were involved in the abalone poaching gangs. Their involvement caused friction, distrust, and division in the Buffeljagsbaai community. This resonates with research undertaken by Hauck and Sweijd (1999), and Hauck et al (2002), which reports in coastal communities there is conflict amongst community members, animosity, and violence due to the influx of poachers in their area. Ultimately, this directly affects decision-making processes and development. An additional social issue that results from illegal dealing was the youth taking part in poaching activities. Money obtained from poaching is then used for drugs and alcohol and further increases criminal activities in the community (Lambrechts and Goga, 2016). The community of Buffeljagsbaai is a poor community and fishing is unpredictable and unreliable, therefore people turn to poaching because quick access to large sums of money (Iscaacs and Witbooi, 2019; Hauck et al., 2002). Finally, the community highlighted corruption within the community and institutions as a key factor as to why the poaching issue is not being addressed. This finding is supported by the findings of Isaacs and Witbooi (2017) and Hauck et al. (2002) research.

6.3. The Disconnect of Mandates and Action of Government Institutions

6.3.1. Limited statehood

On paper, the Buffeljagsbaai community is subjected to various government rules and regulations with regards to resource use and access, yet the support of government institutions in terms of implementing various legislative provisions and assisting with livelihoods and service provision is lacking. This phenomenon is referred to as limited statehood and refers to when the country's government lacks the ability to implement activities in a certain area (Risse and Stollenwerk, 2018; Krasner and Risse, 2014).

In the case of Buffeljagsbaai, the ODM has policies, programs and plans that set out strategies to ease the effects of climate related risks and support communities during disasters or difficult times. An example of one these plans is the OCCRF, whereby the ODM is trying a more collaborative approach to address climate-related problems in Buffeljagsbaai. However, from what was observed during the study was that these strategies had not been implemented effectively, especially in small isolated rural communities like Buffeljagsbaai. For example, the OLM are aware of the climate risks in the Overstand region and their responses are guided by the CMP, CML, CAS and the Overberg Climate Change Response Framework (OCCPF) (SSI-I, 2020). In the OCCPF, it outlines various procedures which the municipality should follow to respond to climate related risks. However, some of the responses are beyond the municipalities mandate and other organisations such as the private sector and NGO's are often get involved to assist vulnerable communities. The OCCRF confirmed that in the Overberg district, fish stocks have declined substantially over the past century, however, there is no current programme or strategy to assist coastal communities such as Buffeljagsbaai in dealing with the decrease in inshore species. It would seem that apart from ineffective implementation of programs and strategies, the various government institutions (Municipalities and DEFF) with responsibilities in the coastal zones, did not have the capacity to execute all their mandates and strategies. Furthermore, this failure to fulfil their mandates can lead to distrust of government institutions because of the many broken promises. This is seen as one of the main challenges in limited statehood regions where there is no trust in government (Risse and Stollenwerk, 2018; Schmelzles and Stollenwerk, 2018). Furthermore, this echoes the need for a more integrated and collaborative response.

The poorly defined roles and responsibilities of these different institutions and the lack of clarification regarding what mandate fall within their jurisdictions creates confusion within communities who often have no idea which government institutions are responsible for which actions and do not know where to seek help. Moreover, the interviews suggested that the officials within ODM, OLD and DEFF did not know what was happening in the Buffeljagsbaai community and carried out their duties which did not necessarily benefit the community, raising concerns about transparency and accountability. According to studies done by Risse and Stollenwer (2018) and Schmelzles and Stollenwerk (2018), one of the side of effects of limited statehood is the lack of trust of government institutions because of their failure to uphold promises, their absence which initiated dangerous gangs claiming their area and involvement of illegal activities. This resonates in Buffeljagsbaai where the community is suspicious of and struggles to trust the government authorities (DEFF) because of past involvements in abalone poaching. The corruption of government authorities have tarnished the reputation of all government institutions in the eyes of local communities and therefore, as found in studies elsewhere, government has difficulty implementing and enforcing rules,

regulations and lack the power to control organized crime (Risse and Stollenwerk, 2018; Schmelzles and Stollenwerk, 2018). Furthermore, any assistance or support from the government institutions is received with is undertone of suspicion and hesitation from communities much like Buffeljagsbaai and their relationship with the Small- scale Fisheries Directorate within DEFF.

In the Municipal Systems Act there is a great emphasis on public participation and the importance of community involvement in development processes in order to improve the standard of living of local communities. However, in the case of Buffeljagsbaai, participation has been limited and they are excluded from decision-making processes. Community members report that they only hear of a development that involves them long after decisions have been made, such as the construction of the two abalone farms adjacent to their community. Similarly, one of NEMA's underlying principles requires public participation of all interested and affected parties especially the most vulnerable in decision-making processes (Department of Environmental Affairs, 2017). Lack of involvement in decision-making extends to fisheries management as well since there is a lack of information about fishing areas and permit requirements. Furthermore, the failure to recognize the importance of marine resources to meet basic needs and lack of participation in planning and decision- making are contrary to provisions in NEMA and the SSFP. These failures suggest that State institutions are largely absent in rural communities like Buffeljagsbaai, not fulfilling their legal mandates and not co-operating and communicating across various levels of government as required by law.

6.3.2. Filling the Statehood vacuum

Given the weak institutional support provided by institutions, NGOs such as ABALOBI have an enormous role to play in the providing support to the rural coastal community of Buffeljagsbaai. They have a better grasp of local challenges and due to their close engagement with local fishers are able to compensate in some way for the shortfalls of government institutions. Some scholars argue that involvement of groups like NGO's can be seen as the 'solution' to the problem of limited statehood (Schmelzles and Stollenwerk, 2018; Reiser and Kelly, 2011). For instance, ABALOBI provides a platform for the fishing community of Buffeljagsbaai, to sell their catches and other products by removing the middleman, thus allowing the community to obtain optimal sales and prices for their products. This allows fishing to be more profitable for the community and provides greater livelihood security. Indirectly, NGO's like ABALOBI contribute towards governance in two ways; they act as non-State regulators and they influence the regulations of other non-State regulators. Both Masifundise and ABALOBI have provided the Buffeljagsbaai community with opportunities to start their own businesses or a small enterprise that enables them to earn a modest income. This capacity and skills development gas been built through workshops that highlighted their rights in terms of the law and provided knowledge and skills in, marketing arts and crafts, leadership programs, business planning programs. Through the ABALOBI platform they have a place where home-made food items can be sold directly to restaurants. Thus, NGOs like ABALOBI and Masifundise have supported the community through facilitating workshops and projects over the years that provide the community with the necessary knowledge and skills to find employment or start a business. However, although NGO's can be seen as one of the solutions to the limited statehood, they cannot fully compensate for government institutions in terms of providing services, facilities and support during disasters or planning for SLR. They can only fill some of these gaps. Most NGO's, while concerned with upliftment of poor

communities, usually have a particular mission that is narrow and are not necessarily able to focus on the scope of issues facing a community for example, dealing with a specific problem that might be hindered by legislation or exacerbated by climate change.

Although, NGO's have a positive impact on rural coastal communities, like many organizations their roles are niche specific (in silos) focusing on one problem not realizing how every aspect of life is interlinked (Leiren and Jacobsen, 2018). Institutions usually do not have a holistic picture of what is going on in rural coastal communities, but rather deal with things individually (in silos), not seeing the connection between different art of the system. This was expressed multiple times by community members that institutions pass laws and regulations without any knowledge of current happens in the community. Furthermore, the concept of institutional bricolage addresses the complexity of a system. Institutional bricolage creates arrangements that are adapted for multiple purposes, embedded in networks of social relations, norms and practices, and seek to maintain social consensus (Steenbergen and Warren, 2018; Merrey and Cook, 2012). For instance, an NGO or private company could create opportunities for local communities to improve their standard of living however, fail to see how climate change risks could counteract their efforts such as the partnership between ABALOBI and the fishing community of Buffeljagsbaai that has focused on creating a platform to market and sell their goods but does not extend to addressing the impacts of climate change on fish stock or the weather. Nonetheless, their efforts significantly improve the lives of the community. However, NGO's are not able to create hard laws, but they can encourage the creation of "soft laws" which refers to codes or standards that the government might choose to employ (Reiser and Kelly, 2011). Another example, according to DEFF they are currently working alongside with ABALOBI to establish an identity for SSFs through speaking about their history as well as monitoring their catch data and creating optimal value for catches that have no value. Similarly, the private sector could play a positive role in rural coastal communities like Buffeljagsbaai. Unfortunately, in the case of Buffeljagsbaai there is animosity between the BAF and the community. In conclusion, NGO's and the private sector have niche roles, and while they are playing an important role in addressing community issues and filling gaps that should be fulfilled by government institutions, they deal with a specific issue that are maybe interlinked with other issues and do not have the scope to address the full suite of need and issues facing poor coastal communities such as Buffeljagsbaai. So, while involvement of NGO's could be a solution to help government institutions in places where they are lacking, it would require an integrated approach that considers the basic needs of communities, the complexity of livelihoods, and the threats that they are facing. However, the major obstacles to achieving this integration is the lack of clarity regarding the roles and responsibilities for coastal risk in such vulnerable communities, which institutions would facilitate this integration across all relevant institutions and NGOs and the lack of resources and capacity at all levels of government.

6.3.3. The Bigger Picture

The presence of limited statehood and the struggle of grasping the complexity of livelihoods requires the venturing in other approaches that would be better equipped in embracing the complexity of a system henceforth the concept of institutional bricolage. Through Institutional Bricolage, is an opportunity for hybrid governance arises whereby roles and responsibilities of a given region is distributed amongst different institutions which will allow for more efficient

and effective fulfillment of duties that does not exceed the capacities of institutions (Schmelzle, 2011). This approach would contribute to, generating opportunities for greater exchange of knowledge and ideas with relation to the management of SSF communities that are facing threats to their livelihoods. Not only will this approach describe how mechanisms for resource management and action plans are borrowed or constructed from existing institutions allowing for a transdisciplinary integration of knowledge and experience but, would also have the power to examine the complex and dynamic nature of resource management and the relations between institutions and livelihood strategies (Cleaver and Whaley, 2018; Merrey and Cook, 2012; Cleaver, 2002). Cleaver (2000) states that institutions are evolving from multiple processes including conscious and unconscious acts and borrowing of acceptable patterns of interactions from social relations rather than being carefully and rationally crafted. Instead of 'borrowing' previously used patterns from other areas, Institutional Bricolage advocates for government institutions to work alongside actors like ABALOBI to facilitate conversations needed to improve collaboration between the different levels of government institutions and hold them accountable for their roles and responsibilities. In an interview with a DEFF representative, revealed a collaboration with ABALOBI in connection with the Small- scale Fisheries Policy.

Scoones (2015) explains that livelihoods are complex and cannot be dealt with compartmentally from other aspects of life as all aspects are intertwined. There are no set rules that can be applied to all coastal livelihood systems because the same rules that work well in one system are part of a failed systems somewhere else (Ostrom, 2008). Therefore, an adaptive and robust approach is required in designing the rules, regulations and legislation of institutions. Within areas of limited statehood such as in Buffeljagsbaai the opportunity for Institutional Bricolage arises and; offers some possibilities as to how NGO's could support the community where the municipality and other institutions are lacking in order to enhance co-ordination between the different scale of government.

CHAPTER SEVEN: CONCLUSION

This study explored the role of institutional actors in supporting coastal communities at risk from climate- related risks, with a specific focus on how small-scale fishing communities adapts to climate and coastal- related risks. It sought to understand the roles of the relevant institutions in the community regarding the perceived effectiveness of institutional strategies in addressing coastal-related risks faced by the community. What emerged from the study was a range of impacts associated with coastal-related risks and how these affected the livelihoods of the community. Buffeljagsbaai is an old traditional fishing community where offshore fishing is their primary source of income and sustenance. Climate and coastal- related risks have a significant impact on the well-being and livelihood strategies of the community. In addition, access to fishing rights and other basic facilities are lacking in Small- scale fishing communities, further rendering them vulnerable to climate change and coastal risks. Despite the lack of interventions from government institutions, the community have found ways to adapt to coastal risks through the diversification of livelihoods and the aid of NGOs such as ABALOBI in providing a platform to sell their catches and homemade food directly to restaurants. In the small- scale fishing communities, it is not unusual for women to have more diversified livelihoods as they were involved in numerous activities that generated income, thus making the women more resilient to coastal-related risks, whereas the men are mainly involved in off- shore fishing which is limited to good fishing days, making them more vulnerable to coastal-related risks. The limited fishing days as well as the ongoing struggle to secure fishing rights have pushed some of the community into 'poaching' activities. Some fishermen expressed that 'poaching' and illegal fishing is considered acceptable in the community if you are providing for your family and not trying to make quick money. Buffeljagsbaai, is a hotspot for abalone, and has attracted an influx of outsiders or poaching gangs thus, creating a number of challenges for the community such as drug and alcohol abuse, crime and the involvement of youth.

This study revealed that although the Buffeljagsbaai community is subjected to various rules and regulations for access to resources from the government, the presence of government institution in terms of assisting with livelihoods and service provision is lacking. This phenomenon is referred to as limited statehood whereby the county's government lacks the ability to implement and enforce rules, regulations and lack the power to control criminal activities. The Overberg District Municipality, OLM and Department of Environment, Forestry and Fisheries have various mandates and strategies to assist and support the community during vulnerable times, however, are not effectively being executed nor have the capacity to implement it. The inability of the government to fulfil their promises has created a distrust among the community. Furthermore, this has led the community to seek assistance from non-government institutions; Masifundise has fought many times for fishermen's rights in the community and ABALOBI strengthening their livelihood security. Non-government institutions have a better understanding local challenges and can be seen the solution to the absent government institution through compensating some of the shortfalls. However, NGO's missions are problem specific and addresses only what falls under their umbrella. The gap lies

in the isolation of problems and dealing with it as if they are not all connected. What is needed is for institutions to have a more holistic picture of what is happing on the ground. The concept of institutional bricolage embraces the complexity of a system and creates arrangements that can be adapted to multiple situations. This type of system is needed when dealing with coastal livelihoods, that can welcome the complexity and not shy away from it. Furthermore, the concept of Institutional Bricolage could offer possibilities to plug the institutional failures occurring with the Buffeljagsbaai community.

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APPENDICES

Interview Questions

Department of Agriculture Forestry and Fisheries

1. What is your name, background and position at DAFF?
2. Could you briefly explain to me your current roles and responsibilities?
3. After doing research in Buffeljagsbaai, I've notice that sea level rise is affecting the community through flooding and damaging property. Are you aware of this issue?
4. Is there anything DAFF can do as a Fisheries Authority to intervene and assist with coastal risks faced by marginalized fishing communities on the coast.
5. There is a general perception among fishers in places like Buffeljagsbaai community that trawling boats offshore are depleting fisheries resources, and as a result there is less fish for them to catch nearshore. What is your take on this?
6. It is well known that the issue of poaching on the coast of Buffeljagsbaai is a pressing issue. In recent years, there were news headlines about poaching in that region spreading to Gaansbaai and it seems to be a very sensitive subject to the community (and perhaps DAFF). What is your take on the poaching situation in Buffeljagsbaai?
7. Are there any interventions that DAFF is implementing to assist marginalised coastal communities like Buffeljagsbaai in terms of dealing with coastal risks from:
    a) climate related issues (i.e. sea-level rise, etc)
    b) livelihood vulnerabilities faced as a fishing community (i.e. access to marine resource, assistance with economic projects related to marine resources, permit issues, etc)
    c) Other risks
8. Are there any previous or existing collaborations between DAFF and other actors involved in the governance of the coast like NGOs, or other government departments, local co-ops, etc? Explain each project/ Relationship.
9. In your view, which governance actor(s) should take the main responsibility/mandate of assisting coastal fishing communities like Buffeljagsbaai in dealing with various coastal risks discussed above?

Overberg District Municipality and the Overstrand Local Municipality

1. What is your name, background and your position in the Municipality?
2. Could you briefly explain to me your current roles and responsibilities?
3. What are the key economic activities that generate income in the Overberg municipality?
4. What are the major land uses in this Municipality?
5. After doing research in Buffeljagsbaai, I've notice that SLR is affecting the community through flooding and damaging property. Are you aware of this and other coastal risks or vulnerabilities that are faced by people living along the coast within the municipality? If yes, can you list those?
6. Does the municipality have any strategies or plans in place to address coastal risk?
7. I've observed that there are affluent communities in places like Pearly beach and marginalised communities like Buffeljagsbaai. How does the municipality do service delivery for such differentiated groupings?
8. Do you have a strategy to improve the livelihoods in marginalised communities? Education, employment, etc?
9. Are there any specific strategies that assist small-scale fishing communities like Buffeljagsbaai?
10. After my visit to Buffeljagsbaai community, I notice that there was an abalone farm near the community. Can you clarify who the land belongs to?
11. What is the municipalities plan moving forward to address issues faced by communities on the coast with overcoming coastal risks?
12. Are there any collaborations with other actors in the community such as DAFF or other departments or NGOs?
13. It is well known that there is poaching in Buffeljagsbaai, it was on the new and seems to be a very sensitive subject to the community. What is your take on the poaching situation in Buffeljagsbaai?
14. In your view, which governance actor(s) should take the main responsibility/mandate of assisting coastal fishing communities like Buffeljagsbaai in dealing with various coastal risks discussed above?
15. Are there any previous or existing collaborations between your organisation and other actors involved in the governance of the coast like NGOs, or other government departments, local co-ops, etc? Explain each project/ Relationship.

Abalobi

1. What is your name, background and your position in the company?
2. Could you explain what your organization is about?
3. Could you briefly explain to me your current roles and responsibilities?
4. After doing research in Buffeljagsbaai, I've notice that SLR is affecting the community through flooding and damaging property. Are you aware of this issue?
5. Is there anything Masifundise can do as a Fisheries Authority to intervene and assist with coastal risks.
6. Some fishermen in the community perceive that the Big trawling boats are depleting fish and therefore there is less fish for them to catch, what is your take on this?

7. It is well known that there is poaching in Buffeljagsbaai, it was on the new and seems to be a very sensitive subject to the community. What is your take on the poaching situation in Buffeljagsbaai?
8. Are there any interventions or initiatives that Masifundise is implementing to assist marginalised coastal communities like Buffeljagsbaai?
9. Are there any previous or existing collaborations between your organisation and other actors involved in the governance of the coast like NGOs, or other government departments, local co-ops, etc? Explain each project/ Relationship.
10. In your view, which governance actor(s) should take the main responsibility/mandate of assisting coastal fishing communities like Buffeljagsbaai in dealing with various coastal risks discussed above?

Buffeljagsbaai Abalone Farm

1. What is your name, background and position in the company?
2. Could you explain what your company is about?
3. Could you briefly explain your current roles and responsibilities?
4. What are your company's objectives for the company?
5. What type of opportunities do you bring to the Buffeljagsbaai community?
6. What is the company's future plans?
7. Are there any collaboration with other actors on the coast like NGOs, or other departments? Explain project/ Relationship.
8. How did you obtain the land for your company?
9. Are there any previous or existing collaborations between your organisation and other actors involved in the governance of the coast like NGOs, or other government departments, local co-ops, etc? Explain each project/ Relationship.
10. In your view, which governance actor(s) should take the main responsibility/mandate of assisting coastal fishing communities like Buffeljagsbaai in dealing with various coastal risks discussed above

Community Interview Questions

1. How long have you lived in the community?
2. What work do you do? How long have you been doing this work?
3. How many people live in the community?
4. How many are involved in fishing or part of the fishing community?
5. What are the different types of work/ jobs done by the community?
6. When was the community established?
7. How was this community established? How was this land found?
8. What did the community look like in the beginning?
9. What changes took place in the community With regards to the fishing community?
10. Do you feel climate change has a positive or negative impact on your life? How so?
11. Do you feel climate change as a positive or negative impact on the community?
12. What do you feel is the biggest challenge facing the community?
13. Could you identify the different climate-related risks and which one you feel is affecting your house/ community the most? How so?

14. What is your understanding of coastal risks and climate change?

15. In what ways has fishing changed over the years?
16. Have you notice any difference in your catch amount or location of fishing?
17. Did these changes have a positive or negative impact on you as a fishermen? And how so?
18. How have these changes affected your life?
19. How do you or your family deal with these climate-related changes?
20. Could you explain the role of women in the fishing community?
21. Could you explain the role of men in the fishing community?
22. Do all fishermen have access to boats or equipment
23. Could you describe to me your daily routine or what's a normal day for you?
24. What the institutions involved in the community?
25. In what ways have these institutions helped the community? and what ways they have not?

DEPARTMENT OF Environmental and Geographical Science

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Informed Voluntary Consent to Participate in Research

Project Title: The role of institutional actors in supporting coastal communities at risk from climate change: A case study of Buffeljagsbaai, South Africa

Invitation to participate, and benefits: You are invited to participate in a research study conducted with community members, government officials, Non-governmental organisations and private companies. The study aim is to examine the nature of climate-related risks faced by Buffeljagsbaai community, and the role of governance structures In supporting the community at risk. I believe that your experience would be a valuable source of information, and hope that by participating you may gain useful knowledge.

Procedures: During this study, you will be asked to you will be asked to answer a few question and part take in group activities.

Recording: We may take photographs and record audio, as part of the study. If you object to this, please indicate this below.

Risks: There are no potentially harmful risks related to your participation in this study.

Disclaimer/Withdrawal: Your participation is completely voluntary; you may refuse to participate, and you may withdraw at any time without having to state a reason and without any prejudice or penalty against you. Should you choose to withdraw, the researcher commits not to use any of the information you have provided without your signed consent. Note that the researcher may also withdraw you from the study at any time.

Confidentiality: All information collected in this study will be kept private in that you will not be identified by name or by affiliation to an institution. Confidentiality and anonymity will be maintained as pseudonyms will be used.

What signing this form means:

By signing this consent form, you agree to participate in this research study. The aim, procedures to be used, as well as the potential risks and benefits of your participation have been explained verbally to you in detail, using this form. Refusal to participate in or withdrawal from this study at any time will have no effect on you in any way. You are free to contact me, to ask questions or request further information, at any time during this research.

I agree to participate in this research (tick one box) ☐ Yes ☐ No _____ (Initials)

I agree to be photographed/audio-recorded/video-recorded (strikethrough as applicable)

☐ Yes ☐ No _____ (Initials)

I agree to the use of properly anonymized photographs/audio recordings for research purposes (strikethrough as applicable)

☐ Yes ☐ No _____ (Initials)

_____ _____ _____

Name of Participant Signature of Participant Date

_____	_____	_____
Name of Researcher	Signature of Researcher	Date

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15 March 2021

Alveena Aziz
Department of Environmental and Geographical Sciences

The role of institutions in supporting coastal communities at risk from climate change: A case study of Buffeljagsbaai, South Africa

Dear Alveena Aziz

I am pleased to inform you that the Faculty of Science Research Ethics Committee has approved the above-named application for research ethics clearance, subject to the conditions listed below.

- This clearance has been approved retrospectively based on a report submitted on procedures for research activities already undertaken.
- Restrictions on involving human participants in research must be adhered to, given current concerns about the spread of Covid-19. Please ensure that you are aware of and have complied with UCT policy on this, as communicated by management.
- That the measures described in your application to ensure that the process of your research is ethically sound have been accurately reflected; and
- You have upheld ethical principles throughout all stages of the research, responding appropriately to unanticipated issues: please contact me if you need advice on ethical issues that arise.

Your approval code is: **FSREC 028 – 2021**

I wish you success in your research.

Yours sincerely

Dr Melissa Densmore
Acting Chair: Faculty of Science Research Ethics Committee

Cc: Dr Philile Mbatha and A/Prof Merle Sowman (supervisors)