In the intertidal zone, women in small-scale fisheries in times of climate emergency

Fisher People Tribunal Case Report

Authors: Boitumelo Mngomezulu, Nobathembu Ndzengu and Jackie Sunde

Editors: Carmen Mannarino (Masifundise) and Jackie Sunde

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Summary of Case report:

- The KwaZulu-Natal (KZN) coastal zone of South Africa is characterized by its rich marine biodiversity and significant small-scale fisheries (SSF) sector, where women play a crucial role, particularly in mussel harvesting. This sector is vital for local livelihoods, food security, and economic stability. However, the sector faces acute challenges exacerbated by climate change, governance shortcomings, and inadequate infrastructure.

- South Africa has established a robust legal and policy framework aimed at addressing climate change and managing marine resources. The Climate Change Act (2024), along with various marine and coastal management policies, forms the backbone of this framework. These policies are intended to guide climate adaptation and resource management efforts. However, despite the presence of these frameworks, their implementation often falls short, particularly affecting marginalized groups such as women in SSF.

- Local coastal management committees, which are essential for localized decision-making and community involvement, frequently suffer from dysfunction. Many of these committees are either non-operational or lack the resources and authority needed to effectively manage coastal and marine resources. Moreover governance structures responsible for climate adaptation and marine resource management face significant challenges related to coordination and capacity. Ineffective communication between various levels of government and insufficient administrative support hinder the execution of climate adaptation strategies and exacerbate existing vulnerabilities.

- The 2022 floods in KZN highlighted the severe impacts of climate change on coastal communities. The floods caused widespread damage to infrastructure, including fishing gear and coastal facilities. This destruction led to immediate economic losses and disrupted livelihoods, particularly affecting women mussel harvesters who experienced a sharp decline in income and increased food insecurity.

- The contamination of coastal waters following the floods posed additional health risks to women in SSF. Polluted waters compromised the safety of their catch and contributed to rising health concerns, further straining already vulnerable communities.

- The region’s infrastructure was insufficient to handle the intensity of the 2022 floods. Many coastal and fishing-related facilities were severely damaged, revealing critical gaps in

resilience and preparedness. The lack of robust, climate-resilient infrastructure left communities exposed to severe impacts from climate-induced events.

- The response to the 2022 floods demonstrated significant gaps in disaster preparedness and management. The existing systems proved inadequate in addressing the immediate and long-term needs of affected communities, highlighting the necessity for improved planning and response strategies.

Abbreviations and Acronyms

AUC-NEPAD	African Union Commission - New Partnership for Africa's Development
AIR Centre	Atlantic International Research Centre
CBD	Convention on Biological Diversity
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
DAFF	Department of Agriculture, Forestry and Fisheries
DCCS	Durban Climate Change Strategy
DFFE	Department of Forestry, Fisheries, and the Environment
DWS	Department of Water and Sanitation
E. coli	Escherichia coli
ECHO	European Civil Protection and Humanitarian Aid Operations
FAO	Food and Agriculture Organization
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICMA	Integrated Coastal Management Act
IDP	Integrated Development Plan
ITLOS	International Tribunal for the Law of the Sea
KZN	KwaZulu-Natal
MLRA	Marine Living Resources Act
MSF	Médecins Sans Frontières
NEsMP	National Estuarine Monitoring Programme
OHCHR	Office of the High Commissioner for Human Rights
PFA	Psychological First Aid
SSF	Small-Scale Fisheries
SSFP	Small-Scale Fisheries Policy
TOCE	Temporarily Open Coastal Estuaries
UN	United Nations

Section 1: Introduction

Women in small-scale fisheries (SSF) in South Africa are uniquely located at the nexus of climate change, ocean and coastal governance and social justice. Restricted by the legacy of racial, class and gender oppression experienced by black women in South Africa, women small-scale fishers now find themselves at the harsh intersection where climate change is shaping their lives as fishers. They are struggling to survive the compounding waves of social injustice in this intertidal zone, where the right to harvest resources meets the on-going governance failures of the post-apartheid government to create a safe and secure environment in which women small-scale fishers can thrive.

During the period 8-11th April 2022, an extreme flooding event hit the south coast of KwaZulu-Natal province on the eastern seaboard of the country, killing 500 people and causing widespread displacement due to extensive erosion and damage to houses (Bond and D'Sa 2022). The floods resulted in significant disruption to thousands of residents' lives and economic activities. For women small-scale mussel harvesters of the south coast, the floods laid bare their extreme vulnerability, washing away aging municipal water treatment infrastructure, unleashing storm and untreated water and effluent carrying increased levels of e-coli, plastics, hydrocarbons and other pollutants down the rivers and streams and into the ocean. This event, and a subsequent extreme flooding event in 2024, not only washed a significant amount of mussels off the rocks, impacting their food security drastically, it has exposed the toxic mix of failed co-operative governance and continued discrimination against women SSF that has been operating in this region for decades. In this context, climate change is not only about the environment, but in its destructive path it carries with it the power of the unequal gender, social and economic relations that epitomize the neo-liberal, extractive, capitalist approach to development that is the KZN sea and land-scape, 30 years after the first democratic elections.

The community of Umgababa, situated at the mouth of the Umgababa River, on the Indian Ocean in the coastal region of KZN, where significant flood damage and displacement occurred, serves as a case study to examine the impacts of government efforts to address these plural impacts of climate change on women small-scale fishers. While national and provincial governments undertook initial measures to ensure the safety of displaced residents, the sustainability of these efforts has been questioned as many continue to face ongoing challenges. Furthermore, the environmental upheaval triggered by the floods poses critical challenges to maintaining food security and ensuring access to a clean environment. The growth and size of mussels, crucial for economic stability, is threatened, intensifying the vulnerability of local communities, especially women who rely on mussel harvesting for their livelihoods. In turn, this increased focus on the status of mussels along their coastline has surfaced deep concerns about high levels of contaminants and pollutants in the mussel stocks, and the dangers of these for the communities who depend on them. These concerns predate the flood damage and trigger an inquiry into the adequate measures adopted by local, provincial and national governments in delivering integrated, equitable and sustainable climate appropriate governance of our oceans and coasts. Mussels are known as filter feeders of the ocean, and as such, are excellent markers of the health of the ocean (Martinez et al., 2019).

This report sheds light on the complex intersection of climate change with SSF governance, examining the responses to the recent climate-related disaster of the floods in KZN in Umgababa and assessing their adequacy in safe-guarding vulnerable communities, particularly women.

Section 2: Context: Women's roles within the SSF Sector

Women are integral to the operation of small-scale fisheries and contribute significantly to the sustenance of coastal communities and the global seafood supply (Groenmeyer, 2014, FAO 2015). Their involvement spans across various stages of the fishing value chain. Women's primary roles in the small-scale fishing sector ranges from making and repairing nets, collecting bivalves and other targeted species in shallow water by foot, processing fish (cleaning, smoking, salting, etc.), and trading (AUC-NEPAD, 2016; Deeg, 2023). Whilst women participate throughout the SSF value chain, they are mostly employed in post-harvest activities such as processing and trading. Post-harvest activities which account for about half of the 1,39% of Africa Gross Domestic Product, represent the stages of the value chain where women make a substantial economic contribution (Du Preez, 2018). Although it is a common perception that the fishing sector is predominantly a male domain, women comprise 47% of the global fisheries. Women's contribution to SSF is significant, especially considering that the sector provides a primary source of protein for millions of people across the globe, particularly in coastal communities (Chambon, 2024). Moreover, women in fishing communities contribute to a range of broader social and economic services within households and the broader society (Du Preez, 2018). When women perform household activities, such as looking after children, taking care of the elderly or sick family members, they enable their male counterparts to go out to the sea (Masifundise, 2022).

Despite their involvement in various aspects of the SSF value chain, women's contributions to the sector have historically been overlooked, disregarded and unacknowledged, partly because of definitions of SSF which mostly focus on harvesting activities by boat, thus excluding women. The exclusion of women, complemented with the general perception that women's fisheries work is simply a continuation of household tasks and not fishing, makes the role of women in the SSF sector to go unnoticed (Deeg, 2023). Moreover, entrenched gender norms and power dynamics often restrict women's participation in decision-making processes related to fisheries management and resource governance, further marginalizing their voices and agency (Masifundise, 2022).

Section 3. The history of mussel harvesting in South Africa

There is an extensive archeological record of the harvesting of inter-tidal resources for food along the entire coastline and it is estimated that the history of harvesting in South Africa extends back at least 100,000 years (Harris et al 2003). Women constitute about one-third of fishers in rural areas and are heavily involved in harvesting intertidal resources, particularly along the KwaZulu-Natal coast where they form the majority in rural fishing communities (Clark et al 2002). In 2002 Clark et al. (2002) estimated that there were approximately 21 641 households along the KZN coast involved in subsistence fishing but the exact number of women harvesters was not known. Women harvest mussels, alikreukel, oysters, limpets and periwinkles and are involved in the pickling of these products. Women are also involved in harvesting prawns and crabs, as well as red bait and octopus. Whilst there are women who go to sea and engage in boat-based fishing, patriarchal beliefs have played a role in restricting most women to shore-based activities.

Mussels (*Perna perna*), are a particularly important source of food for women living in rural areas in South Africa and they are also harvested extensively by recreational fishers (Tomalin and Kyle 1998, Harris et al 2003, Everett 2014). The brown mussel Perna perna (Linnaeus, 1758) is the dominant mussel species on shallow intertidal reefs in KwaZulu-Natal (KZN) province, eastern South Africa, where it occurs in dense mussel beds that are exploited by recreational and subsistence fishers (Steyn et al, 2019). Poor rural women, referred to as 'subsistence' harvesters in the literature, harvest mussels in the northern sections of Maputaland and in the south of KZN (Steyn 2019). The recreational fishery is widespread along the KZN coast and removes much larger quantities of mussels annually than the subsistence fishers (Steyn, 2016 in Steyn 2019:1). Data indicates that recreational fishers use mussels for seafood or bait for angling. Of 13000–15 000 recreational fishing permits for invertebrates (including spiny lobsters, oysters, crabs and prawns) sold per year between 2010 and 2014, those for mussels made up 23–28% (Steyn, 2016; Steyn and Schleyer, 2014 in Steyn et al, 2019), suggesting that in the region of 3500 recreationals are involved in the harvesting of mussels.

Despite the importance of mussels as a source of food for rural residents, subsistence mussel harvesters have faced extensive criminalisation and hardship (Harris et al 2003). Subsistence fishing was not legally recognised in South Africa prior to 1998. In 1998 the Marine Living Resources Act (MLRA) was enacted and subsistence fishers were recognised for the first time. The MLRA made it legal for subsistence fishers and recreational fishers to harvest mussels for their own consumption within strict gear and bag limits. Recreational fishers were able to go to any post office and purchase an annual permit for harvesting, however subsistence fishers had to be part of the state managed fisheries rights allocation system. Following the recognition of subsistence fishers in 1998, relatively few fishers were formally recognised as subsistence fishers in South Africa and allocated permits to harvest mussels. The Ezemvelo KZN Subsistence Fisheries Unit managing subsistence fisheries in the province after 1998 only issued permits for 421 subsistence intertidal invertebrate collectors (Mann et al 2014), thereby excluding thousands of fishers who remained outside of any legal fisheries management framework (Sunde and Erwin 2020).

3.1 Mussel harvesting in KwaZulu Natal

In KwaZulu-Natal mussel harvesting was regulated prior to the MLRA through a license and bag-limit system, and specific types of implements were mandated. Traditional methods and quantities of mussel harvesting by subsistence harvesters was illegal under this legislation, and mussels could only be harvested for own consumption and recreational use. This was enforced by the provincial conservation authority, the Natal Parks Board, which later became Ezemvelo KwaZulu-Natal Wildlife (Harris et al 2003:62). Reliant on mussels for food, women continued what was regarded as "large-scale illegal harvesting of mussels by subsistence gatherers", at night along certain sections of the KZN coastline and "conflict existed between subsistence gatherers and licensed recreational gatherers, and between harvesters and the authorities" (Harris et al 2003:62).

Data from 2011, indicates that mussels alone accounted for 9000 kg of harvested resources, thus indicating that mussel harvesting provides a substantial portion of the income for many households (Everett, 2014). These resources contribute significantly to the protein available to rural and urban households. In this regard women mussel harvesters play a key role in ensuring

adequate food for their families as well as selling a portion of their resources. They rely on these natural resources for their food and livelihoods.

As noted above, research conducted in 2019 has highlighted the extent of recreational harvesting of mussels however the exact extent of small-scale fisher harvesting of mussels is unknown due to the limited number of permits that were issued prior to the establishment of the Small-scale Fisheries sector in 2014. However, since then, most of the 35 SSF cooperatives including just over 2000 fishers were allocated mussels as part of their basket of species and are permitted to harvest mussels for 'own consumption' but not for sale[1]. This figure still suggests that thousands of fishers remain excluded from the legal rights allocation system given that in 2002 it was estimated that there were 21 641 households along the KZN coast involved in subsistence fishing (Clark et al 2002). Anecdotal evidence from women fishers in the province indicates that many fishers still harvest under the radar and some opt to buy the recreational fisher permit (pers.comm women fisher leader 2024).

Section 4: Recognition of the SSF sector in South Africa and the legislative and regulatory framework governing women mussel harvesters

Following extensive advocacy by indigenous, traditional and artisanal, small-scale fishers in South Africa who argued that the MLRA discriminated against them by failing to recognise small-scale fishers who fished for both food and a livelihood, the Equality Court ordered the then Minister responsible for fisheries to develop a new policy that would accommodate the socio-economic rights of these fishers. (George K & Others versus the Minister 2007, Masifundise 2010). A National Task Team with fisher representatives from all four coastal provinces was set up to develop this new policy and after a lengthy process of negotiations the Policy for Small-scale Fisheries was adopted in 2012. Subsequently the MLRA was amended to include recognition of small-scale fishers and small-scale fishing communities.

4.1 Provisions in the Policy for SSF to promote gender equity

The SSF Policy was introduced to recognize and formalize the rights of small-scale fishers. This policy marks a significant shift from previous approaches by prioritizing the socio-economic development of SSF communities and promoting equitable access to marine resources. The SSF policy is specifically significant for its commitment to a human rights-based approach to fisheries governance. The SSF policy highlights the importance of gender equity through several measures (DAFF 2012).

4.1.1 The definition of a small-scale fisher

The policy clearly emphasizes gender equality, particularly focusing on the involvement of women in pre and post-harvesting activities by incorporating a definition of small-scale fisheries that includes all the work up and down the value chain, as well as part-time and contract work. In this regard it emphasizes inclusivity and visibility of women's work, acknowledging the important role of women in SSF and aiming to address the specific challenges they face. By incorporating

[1] One cooperative in northern Maputaland was allocated mussels for commercial use but is still restricted to 50 mussels per person per day.

equality and upliftment into the policy's scope, it highlights the issue of inequality affecting women in fishing communities (DAFF 2012).

4.1.2 Equitable access to resources

The policy promotes equitable access to resources, opportunities, and benefits for women in small-scale fisheries. This includes access to credit, technology, and training programs tailored to enhance women's capacities and livelihoods. These support mechanisms, especially education and training, primarily target vulnerable groups within the community, including women (DAFF 2012).

4.1.3 Promote women empowerment and participation

The SSF Policy sets out several action points that include economic empowerment; participation in management, policy and institutional structures; and education and training in business administration, marketing and other skills that will promote the ability of these women to obtain alternative livelihoods, including in aquaculture. The policy aims to empower women by recognizing and valuing their contributions to the fisheries sector. This involves creating an enabling environment where women can thrive, including addressing socio-cultural barriers that hinder their full participation. The SSF Policy stresses the importance of including women in governance and decision-making processes. It advocates for the establishment of mechanisms that ensure women's voices are heard and considered in policy formulation, planning, and implementation at all levels (DAFF 2012).

Other notable provisions regarding women include the necessity to address their specific needs in working conditions, ensuring capacity building initiatives consider their concerns and needs, prioritizing women's involvement in cooperative activities, giving women preferential treatment in rights allocations, aiding women in developing value-added activities, and strengthening women's roles as fish processors. The SSF Policy also includes provisions aimed at assisting women, though some may not be truly beneficial. For instance, it suggests offering women training as guides, chefs, and tour operators to enhance employment opportunities (DAFF 2012).

Section 5: International and Regional Instruments protecting and promoting women’s rights and gender equality

The Policy for SSF includes reference to the international and regional human rights instruments that are of relevance to women. In addition to the Constitution which prohibits discrimination against persons on ground of gender and provides for the need for government to adopt measures to eliminate discrimination and promote gender equality, South Africa is signatory to a range of other regional and international legal and policy instruments aimed at promoting women’s rights and eliminating all forms of discrimination against women and girl children.

5.1 The Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa

In South Africa, the regulatory landscape for small-scale fisheries is significantly influenced by regional commitments under the African Union (AU). The Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa plays a pivotal role in safeguarding the rights of women, particularly those engaged in small-scale fishing communities. This protocol

goes beyond mere declarations by mandating member states, including South Africa, to take concrete legislative and institutional measures. For instance, Article II of the Protocol requires integrating a gender perspective into policy decisions, legislation, and development plans. This integration is crucial as it ensures that women are not only recognized but actively included in shaping the policies that affect their livelihoods in fisheries.

In addition, Article III emphasizes women's right to dignity, as this right calls for the state to adopt measures that prevent exploitation and ensure legal protection. Article XIII of the protocol promotes economic empowerment, this is important in the small-scale fishing communities where women play critical roles in post-harvest activities. Article XV highlights women's access to food security, this is crucial for the well-being of women in fisheries where food security is intimately tied to sustainable livelihoods and community resilience (AU 2003).

5.2 The International Covenant on Economic, Social and Cultural Rights (ICESCR)

South Africa aligns its laws with global standards to promote gender equality and protect women's rights in economic fields, such as fisheries. The International Covenant on Economic, Social and Cultural Rights (ICESCR) mandates nations to uphold these rights without discrimination. Article II of Part 2, stresses equal economic opportunities for men and women, ensuring women in sectors like small-scale fisheries have fair access to jobs and livelihoods. Article 6 of Article 6 emphasizes states' duty to facilitate full employment rights, including removing barriers women might encounter in entering and succeeding in the fisheries industry.

Moreover, Article 11 of Part III of ICESCR recognizes the right of everyone to adequate food and nutrition. It highlights the importance of international cooperation in ensuring that women, who are often primary caregivers and contributors in fisheries communities, have access to sufficient and nutritious food (UN, 1966).

5.3 The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)

The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) further reinforces these principles. Article 11 of CEDAW mandates states to eliminate discrimination against women in employment, ensuring equal opportunities for women in sectors like fisheries.

Article III of CEDAW emphasizes measures to promote the development and advancement of women, supporting their full participation in economic activities and decision-making processes that affect their lives and livelihoods.

Article XV of CEDAW reaffirms the principle of equality before the law, ensuring that women enjoy legal recognition and protections equal to those afforded to men, essential for their empowerment in fisheries and beyond (UN 1979).

5.4 UN Convention on Biological Diversity

The Convention on Biological Diversity (CBD) is an international treaty that emphasizes the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from natural resources. The CBD recognizes the critical role of women in small-scale fisheries as direct harvesters, knowledge holders, and environmental defenders.

This acknowledgment emphasizes their important contribution to sustainable fishing practices and marine biodiversity conservation .The CBD emphasizes the importance of integrating gender perspectives into biodiversity conservation efforts and recognizing the rights and contributions of women in coastal and marine environments.

Their traditional knowledge and practices are recognized under Article 8(j) of the CBD, which emphasizes the importance of traditional knowledge, innovations, and practices of indigenous and local communities for the conservation and sustainable use of biodiversity. This includes the valuable knowledge held by women in small-scale fisheries communities, who often possess unique insights into local ecosystems and sustainable fishing techniques.

Moreover, Article 10(c) encourages sustainable use practices that maintain the biodiversity of ecosystems, benefiting both present and future generations. Women's involvement ensures that these practices are grounded in local knowledge and are socially and culturally appropriate.

Furthermore, Article 12 of the CBD calls for promoting research and disseminating knowledge related to biodiversity conservation. In SSF contexts, this supports capacity-building initiatives that empower women with scientific and technical skills for sustainable resource management (UN 1992).

5.5 The Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines, 2015).

The SSF Guidelines were adopted by the FAO Committee on Fisheries in 2014. They complement the 1995 FAO Code of Conduct for Responsible Fisheries and promote a human rights-based approach to governance of smal-lscale fishing communities. They support not only responsible fisheries but sustainable social and economic development of small-scale fishers including vulnerable and marginalised people. The SSF Guidelines are based on a human rights-based approach (HRBA) to fisheries as well as drawing guidance from several other key international and regional policy and legislative instruments. "The Guidelines are consistent with and promote international human rights…They also consider the technical guidelines related to the Code, as well as other voluntary international instruments, such as the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (Tenure Guidelines) and the Voluntary Guidelines to support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security. States and other stakeholders are encouraged to also consult these other guidelines, as well as relevant international and regional instruments, to fully integrate applicable obligations, voluntary commitments and available guidance" (SSF Guidelines: 2014:xi).

The Guidelines follow CEDAW in the call to States to introduce specific measures to address the needs and interests of women and eliminate discrimination.

The SSF Guidelines are framed within the context of the United Nations Framework Convention on Climate Change (UNFCCC). They urge States to develop policies and plans to address climate change in fisheries, in particular strategies for adaptation and mitigation, where applicable, as well as for building resilience, in full and effective consultation with fishing communities including indigenous peoples, men and women, paying particular attention to vulnerable and marginalized groups.

Most significantly for women SSF in South Africa is the approach to governance adopted by the Guidelines. The Guidelines recognise that a human-rights based approach to fisheries will only be achieved by an integrated, holistic and cross-sectoral approach to governance. The Guidelines urge parties to develop the necessary co-operative governance arrangements that will enable this approach (FAO 2015).

Section 6: Case study: Umgababa, women mussel harvesters

6.1 Introducing Umgababa, south coast of KZN

Umgababa is situated 38 kilometers to the south of Durban and features a mix of rural and urban characteristics. Previously, it was a sought-after tourist destination known for its appealing scenery (eThekwini Municipality, 2009). There is an abundance of natural resources such as the fauna and flora, the river, the wetland, the estuary, the sand dunes, the beach and flat shores. The IDP notes that 90% of the rural area of eThekwini is defined by its geospatial features, such as hilly, rugged terrain, dispersed settlement patterns in traditional dwellings and communal land holdings under traditional authority. This institutional arrangement is unique to the eThekwini Metropolitan Municipality and presents a number of challenges particularly with respect to land, planning and urban management. Although part of the area is privately owned, most of the land is communally held and governed by the Mnini Traditional Authority (Gopaul, 2006).

The population of this peri-urban community is estimated at 10,814 living in approximately : 2,905 households (SA Statistics 2011). Although no recent population figures are available for this town, it is noted that the latest Integrated Development Plan (2024) indicates that density in this rural periphery has doubled in the last decade (IDP2024:77). In KwaZulu-Natal, over 20% of households are food insecure (DCCS 2022:38) and more female-headed households (45%) are living in poverty in Durban than male-headed households (25%) 144, it follows that female-headed households are more impacted by food insecurity than male-headed households" pp 38. Although no statistics are available for Umgababa specifically, it is noted that in 2020 42.1% of households in eThekwini were headed by women 33. These women-headed households are disproportionately impacted by poverty as 45% of female-headed households in Durban are living in poverty compared to 25% of male-headed households (eThekwini 2022:34).

The challenges faced by this community are similar to those experienced by other communities in South Africa, particularly regarding poverty and the need for development (Gopaul, 2006). Many people live in informal structures. Homes in Umgababa are predominantly characterized by structures built with materials like mud, cement, wood, and iron. These materials, while affordable, often lack the durability needed to withstand natural disasters such as floods (Gopaul, 2006). The Umgababa area suffers from significant deficiencies in essential services and infrastructure (eThekwini Municipality, 2009).

The Umgababa area is inadequately serviced, lacking proper refuse removal, sanitation, and reliable energy sources. This deficiency impacts not only the residents but also forces them to resort to unsustainable alternatives. For instance, using wood as an energy source contributes to environmental issues such as pollution (eThekwini Municipality, 2009).

The socio-economic landscape in Umgababa is marked by significant challenges. Data emerging from Masifundise's fieldwork conducted between 2022-2024 indicates that drug use amongst the

youth is prevalent, contributing to broader social issues and that many households are led by young women and the elderly, often as single-headed families.

Women in Umgababa, like those in other rural regions, face poverty, hostility, abuse, neglect, and various hardships. Many serve as breadwinners and heads of households but lack the resources to leverage their skills for a better quality of life. Although the government has pledged to enhance rural conditions, there has been minimal progress, particularly for women. Past efforts to significantly improve the living situations of rural women have largely been unsuccessful (Gopaul, 2006).

6.2 Reliance on marine resources for economic survival

Data from the Masifundise field work indicates that this coastal community is known for its reliance on marine resources for economic survival and includes a significant number of women who play a prominent role in harvesting mussels, both for income and sustenance. However, many women have been excluded from or chosen to cooperate outside formal SSF cooperatives.

6.3 The establishment of the SSF Cooperative

In 2017 the DFFE verified only 28 persons as SSF however the process of application and verification in this region was fraught with miscommunication and community members report that many people became disillusioned with the process and did not pursue formal recognition (pers.comm community leader 2017). The small group of fishers finally registered their cooperative in 2019 and received their small-scale fishing rights. Currently there are only 21 members of the cooperative, of whom only 2 are women. The local fishers in the area estimate that there are at least 300 women mussel harvesters operating in the south coast region, dependent on harvesting of mussels.

The Basket of Resources allocated to the cooperatives in this region restrict mussel harvesting to 50 mussels per person per day and these are strictly for ‘own consumption’ only. The cooperative must apply for a permit for its own consumption use each season.

The women express considerable frustration at the fact that they cannot sell their mussels. Many are forced to sell their harvest illicitly. They try to sell their harvest at local petrol stations and tourism hotspots.

The very bureaucratic nature of the SSF cooperative Regulations have impacted the viability of the cooperative and as a result, few women are involved. This impacts their participation in community initiatives. Gender dynamics also come into play, with resistance from some men towards female leadership, which can hinder cooperative efforts.

7. Impacts of the 2022 floods on women mussel harvesters in Umgababa: The “Rain Bomb” Displacement and Disruption of Livelihoods

Over the past few years KZN has been increasingly vulnerable to climate change, with an increase in significant climate events like the 2022 flood that left an indelible mark in communities. Over the period of 8-11 April 2022 a ‘rain bomb’ (Bond and D’Sa , 2022) was dropped over KZN, resulting in the death of 443 people, and 88 people who went missing or are unaccounted for. Over 26000

dwellings were damaged and thousands of people had to be evacuated to safety. In addition, 600 schools were damaged, affecting the education of hundreds of thousands of learners, and 84 health facilities suffered damage (Abindor et.al., 2022).

On 18 April, the President of South Africa declared a national state of disaster due to the floods severity. On 20 April, DG ECHO field mission reported massive unattended or inadequately addressed needs notably in the most remote and isolated severely affected areas. The most urgent needs were food, clean water and hygiene packs; health, care and psychological first aid (PFA); protection and education in emergencies (ECHO, 26 Apr 2022 South Africa: Floods and Landslides - Apr 2022 | ReliefWeb). Research shows that this disaster was the most catastrophic natural disaster yet recorded in KwaZulu-Natal (KZN) in collective terms of lives lost, homes and infrastructure damaged or destroyed and economic impact (Grab and Nash 2022) but that flooding has doubled in the last century. This event was described as 'an extreme event' - defined by Grab and Nash as an event "where major rivers were overflowing their banks, together with one or more significant consequences, such as the loss of human life, livestock, agricultural fields and crops, and infrastructure such as buildings, roads and bridges".

Government set up temporary shelters in community halls for displaced persons. However, Masifundise undertook fieldwork in Umgababa, focused on assessing how the 2022 floods affected women engaged in small-scale fishing. The findings revealed significant challenges post-flood, including families being displaced due to homes being eroded. Homes in Umgababa are predominantly characterized by structures built with materials like mud, cement, wood, and iron. These materials, while affordable, often lack the durability needed to withstand natural disasters such as floods (Gopaul, 2006). The Umgababa area suffers from significant deficiencies in essential services and infrastructure (eThekwini Municipality, 2009). As is so often the case, at-risk communities living in informal settlements experience the impacts most acutely. Many of these settlements are located close to rivers, below flood lines, or situated on steep hillsides with little or no infrastructure to protect them from the elements (Abdinor & Sithole, 2024). These shortcomings exacerbate the vulnerabilities of residents, particularly during natural disasters like the 2022 floods. For women, the increased distance to the sea made it difficult to continue harvesting, while children faced obstacles attending schools far from their relocated homes.

Figure 1: Engagement and Data Collection with Fishers in Umgababa

Moreover, data from the field work by Masifundise revealed that the floods caused disruption in transport lines which consequently increased travel costs. The railway line and station that once provided essential commuting services to and from Umgababa (Gopaul, 2006), have suffered extensive damage due to the 2022 floods. Specifically, the R102, a vital road connecting Umkomaas to Amanzimtoti near the uMkhomazi River bridge, remains unrepaired since the floods, with its southbound lane critically damaged. This neglect has not only endangered the lives of commuters but has also impeded access to economic opportunities and essential services for residents of Umgababa. Furthermore, the destruction of a train bridge pillar over the Illovo River has halted train services between Durban and the Lower South Coast, exacerbating transport challenges and isolating communities like Umgababa from critical infrastructure networks (Mthalane, 2024) weeks later thousands remained in evacuation shelters across the province (IFRC, 14 June 2022).

Figure 2: Damaged Electrical Pole and eroded road

Extensive municipal infrastructure was impacted, causing the suspension of critical services such as access to clean water and sanitation. Of particular concern was the fact that the flooding caused damage to the water treatment infrastructure on the south coast, impacting several rivers, estuaries and beaches along the south coast including Umgababa. Immediately it was reported that the failure of the water treatment plants was causing the release of untreated sewage into the rivers and estuary. Medicin san Frontieres reported that “the floods caused serious damage to wastewater infrastructure, including sewer trunk mains and several wastewater treatments works... we see the environment is catching vast volumes of untreated sewage, raising the risk of outbreaks of waterborne diseases in these places” (MSF 2022 www.msf.org).

Figure 3: Damaged Power Line

7.1 Impact of the floods on mussel harvesting

Several of the Coastal Links women fishers working with Masifundise reported that the flooding of the rivers had led to excessive damage along the coast, including extreme damage to the areas where they harvested mussels. They noted many small mussels were swept off the rocks, and the beaches were piled high with plastic pollution and debris. Most concerning to them was the evidence of raw sewage flowing into the rivers and the oceans through the storm water and other pipes. These reports were corroborated by media accounts of the vast pollution all along the eThekwini beaches.Government closed the eThekwini beaches due to concerns regarding contaminated water. According to a provincial government report presented to the KZN Parliament, the eThekwini (Durban) Municipality has at least 27 wastewater treatment works, 289 sewer pump stations and more than 9,000km of sewage/wastewater pipelines. The report says nearly one-third of these treatment works suffered “high” flood damage and an unspecified number were considered to be “totally non-functioning as a result of the floods” (Durban’s sewage-fouled beaches still closed for swimming – and no clear picture on when they will reopen (dailymaverick.co.za);

The Atlantic International Research Centre put out a warning:

“The severe floods caused a significant influx of debris into the coastal zones, originating from the river catchments and poor waste manage

ment. A clear consequence was the extensive quantity of debris, particularly plastics, accumulated on the local beaches. With a high likelihood, an enormous amount of debris had also entered the ocean. However, limited information exists on the locations and quantities of floating debris drifting in the vast coastal ocean, where they represent a threat to fisheries, navigation, and the overall marine ecosystem" KwaZulu-Natal 2022 Floods cause Major influx of Debris into the Ocean - AIR Centre | Atlantic International Research Centre.

Women reported accounts of people falling ill after eating mussels and concern regarding the toxicity of the mussels but people were forced to harvest to feed their families (pers.comm Tozi Mathiyane April 2022).

7.2 Economic Dependency and Vulnerability to food shortages due to inability to harvest mussels

The combined impact of the floods and closed beaches constrained women from practicing their traditional livelihoods, forcing reliance on social grants, such as the R510 child grant and R350 Social Relief of Distress Grant. Women reported struggling to cope financially and having inadequate access to food.

Many women in Umgababa find themselves financially dependent on their partners, which heightens their vulnerability to abuse (Masifundise, 2024). According to data emerging from Masifundise's fieldwork the floods further reinforced entrenched patriarchal norms, limiting women's leadership opportunities and exacerbating their vulnerabilities during crises. Women in small-scale fishing communities shoulder significant family responsibilities. Data emerging from Masifundise fieldwork also highlighted that displacement forced women to redirect finances towards transport to schools that are in distant areas for their children and beaches, where accessing mussels for income became impractical due to polluted beaches and undersized mussel populations washed ashore by the floods.

7.3 Exposure to Environmental Pollution and Health Risks

The 2022 floods intensified pollution in Umgababa's coastal waters, severely affecting shellfish populations critical to local economies.The floods damaged infrastructure crucial for the healthy state of the intertidal ecosystems within which mussels thrive and hence enabling women to harvest. The resultant pollution, exacerbated by sewage contamination, led to high levels of E.coli in the water, rendering harvested mussels unsafe for consumption. The degradation of mussel quality and the compromised nutritional and economic benefits indicated deficiencies in infrastructure maintenance and environmental oversight (Enoch, 2022). Bivalves, particularly mussels, are sensitive indicators of environmental health (Strehse & Maser, 2020). Mussels, as filter feeders, accumulate pollutants like E.coli and heavy metals from contaminated runoff and sewage overflows. High pathogen levels rendered harvested mussels unsafe for consumption, endangering public health and disrupting the livelihoods of women in small-scale fishing communities (Enoch, 2022).

Even months after the floods data from the Department of Water and Sanitation's Integrated Regulated Information System (IRIS) reveals that of the 14 municipalities in KwaZulu-Natal, 10 of

them (71%) regularly failed to comply with minimum wastewater treatment standards. The Department of Water and Sanitation (DWS) system rates them as "bad" (achieving compliance less than 50% of the time) or "poor" (complying with minimum effluent standards between 50% and 70% of the time). This untreated and partially treated sewage is released directly into KwaZulu-Natal's rivers, and in some cases, directly into the ocean. According to the DWS system, in eThekwini, 75% of the 27 sewage treatment plants it operates are failing to treat effluent to minimum standards. They have the capacity to release 761 million litres of untreated or partially treated sewage into the rivers and ocean, per day. The DWS system shows two sewage treatment works, central and southern, together have the capacity to release 461 million litres of effluent directly into the ocean per day. Both of them have a 0% compliance for microbiological treatment, which is the indicator for E. coli and other faecal bacteria (Enoch, 2022).

The failure to prevent climate change impacts, exemplified by the environmental pollution following the 2022 floods, is starkly illustrated by ongoing sewage discharge issues in eThekwini. More than 700 million liters of untreated sewage are discharged into rivers, dams, and oceans daily, elevating E. coli levels and posing substantial public health risks. Despite concerns raised by experts and political parties, beaches have been reopened with questionable water quality standards, endangering beachgoers. Municipal statements claiming improved water quality are contradicted by independent findings showing critical E. coli levels exceeded, notably at Country Club Beach. This mismanagement exacerbates environmental pollution, impacting vulnerable communities like women in Umgababa who rely on clean coastal waters for mussel harvesting (Enoch, 2022).

Research shows that pollution impairs shellfish health and reproductive success, leading to population declines and ecological instability. For women mussel harvesters in Umgababa, these environmental problems mean severe degradation disruptions to their livelihoods. The pollution and degradation of mussel habitats not only endanger their health due to unsafe harvesting conditions but also threaten their economic stability, as they rely heavily on mussel harvesting for income and sustenance

7.4 Pre- flooding situation and the long term contamination of mussels (*Perna perna)* along the eThekwini coastline

The women mussel harvesters' shared their concerns regarding the health status of the mussel beds and the impact on their own health and food security with Masifundise. Masifundise has conducted research into the status of mussel monitoring along the KZN coastline and the information emerging from this research is alarming. It has become apparent that there has been considerable monitoring of *Perna perna* in KZN over the past few decades with alarm bells raised prior to the recent flooding events. The most recent evidence is extremely worrying as it would appear as if little has been done to implement the recommendations from Newman et al.'s work (2015), which clearly stated the need for follow up monitoring, specifically with subsistence and recreational fishers.

In 2015 Newman et al. undertook extensive research in key sites in eThekwini Municipality, including Umgababa, and identified high levels of contamination in mussels. The findings showed that "*polycyclic aromatic hydrocarbons, polychlorinated biphenyls, DDT and metabolites were widespread and at times significant contaminants of sediment in rivers, estuaries and canals in the eThekwini area" . Further, this study found that "confirmation of the potential toxic risk posed by the*

organic chemicals, but particularly polychlorinated biphenyl, was provided by the analysis of contaminant concentrations in the tissue of fish caught and mussels collected in Durban Bay and in the uMngeni and Isipingo River estuaries. This showed that contaminant concentrations in many fish species and in mussels were high enough to pose a potential chronic and carcinogenic health risk to human consumers (and by implication other organisms). This finding has important implications in that it calls for the more frequent monitoring of contaminant monitoring in fish and shellfish ***and the communication of the findings to recreational and subsistence fishers*** **(our emphasis)**. *Commissioning such monitoring and communicating the findings will largely be the responsibility of local municipalities and/or provincial government departments, and budgets need to be allocated for this purpose" (Newman et al 2015). The research identified the following findings:*

Polycyclic aromatic hydrocarbons were ubiquitous in sediment in the eThekwini area, and in catchments where the predominant land-use is urban or industrial were likely to have been predominantly derived from anthropogenic sources. Based on the scientific literature it seems inevitable this ubiquity will apply to other cities along the South African coastline.

The concentrations of several chemicals in the tissue of fish caught and mussels collected in Durban Bay and the uMngeni and Isipingo River estuaries were high enough to pose a potential risk to the health of human consumers. The most notable were polychlorinated biphenyls and mercury. Since it was never the intent of this study to perform a comprehensive human health risk assessment, it is recommended that a comprehensive risk assessment be performed.

A key unknown in the context of determining the potential human health risk posed by contaminants in fish and shellfish tissue are fish and shellfish consumption rates for South African recreational and subsistence fishers.

The authors stated that "*it is thus recommended that a survey of fish and shellfish consumption rates for recreational and subsistence consumers in the eThekwini area of KwaZulu-Natal be performed. This study should also determine the how long recreational and subsistence have fished in Durban Bay, whether these fishers are aware of the risk posed by contaminants in fish and shellfish to their health, and whether their consumption patterns are likely to change knowing that contaminants in fish and shellfish in the Bay pose a potential risk to their health. This study is important since fish caught in local estuaries are evidently an important source of protein for economically marginalised sections of the population, yet there is a distrust that any advice against the eating of fish because they pose a health risk is to restrict the catching of fish by these fishers*" (Newman et al 2015:150).

Shortly after this study was published, In 2017 Gemma Gerber did a study on temporarily open coastal estuaries (TOCE's) on the south coast of KZN, just south of Umgababa in the three estuaries in the Ugu District Municipality, namely Mhlangeni Estuary, Kongweni Estuary, and Bilanhlolo Estuary (Gerber 2017: pp103). This study provided the first reports of microplastic pollution in three selected KZN TOCEs during an open mouth phase and found "Microplastics were recorded in all sampled P. perna individuals'. This Ugu district is described as peri-urban and further away from the larger eThekwini direct sources of micro-plastics so this is very concerning.

The study reported that the ingestion of microplastics by mussels has been shown to have negative physiological effects, such as gut blockage, a false sense of satiation, leading to malnutrition and eventual decrease in reproductive and survival fitness (Von Moos et al., 2012; Wright et al., 2013). In addition, the increased ingestion of microplastics may increase the potential of toxicant transfer

from microplastics to mussels (Chua et al., 2014), and potential increased bioaccumulation of these toxicants along the food web (do Sul and Costa, 2014). As mussels are an important food source for a large social sector (Yap et al., 2004) as well as for a wide variety of other organisms, these results highlight the potential impacts of microplastic pollution on human food sources and emphasizes the need for further research on toxicant transfer mechanisms. As P. perna are an important subsistence food source for a large local population, these findings may have important repercussions for food security within the subsistence sector (Gerber 2017:117).

It is clear that this study has not yet been undertaken by eThekwini. In 2022, conducting the study for the Provincial Department of Environment on the status of the coast, Goble and van der Elst (2022) quote a DFFE scientist and an ORI scientist who indicate that the locality of the recognised SSF fishers in KZN are not known. They state "The exact locality of these 35 SSF communities and the areas in which they can fish is not publicly known, nor are the details of the additional "basket of species" that fishers within each community may harvest" (Lamberth and Mann in Goble and van der Elst 2022: 132).

This shocking revelation that the DFFE and leading KZN research institute, ORI do not know where the SSF are harvesting and what they are harvesting is revealing of the complete failure of DFFE to ensure an "integrated, holistic approach to SSF governance" (as required by the Policy for SSF) in KZN. It would appear that no follow up on subsistence and recreational fishers' consumption of mussels has been done by DFFE, despite two sets of research in the past decade flagging this as important for the health and safety of the harvesters. This begs the question: if the DFFE scientists do not know about the women mussel harvesters, how has DFFE and other sectors and levels of government discharged their climate change adaptation and mitigation responsibilities with regard to these vulnerable women?

Section 8. Responsibility and culpability for the devastation caused by the 2022 floods

eThekwini municipality has been accused in the media of 'green washing' and failing to 'climate proof' the municipality (Bond and D'Sa, 2022). Despite small-scale projects such as Working for Rivers to clear rivers and streams of debris, there was vast blockages of rivers during the 2022 floods. Bond and D'Sa state that Durban's Climate Change mitigation plan has been inadequate. They cite the loss of 500 lives and the devastation caused by the 2022 Rain Bomb. They believe that the extreme pollution reaching the beaches after every storm suggests that there is an inadequate and severe storm water drainage capacity in the context of severe watercourse degeneration and blockages (Bond and D'Sa 2022).

Was the Durban municipality prepared for the Rain Bomb? Evidence related to government's adaptation, mitigation and disaster risk preparedness from the perspective of women mussel harvesters

The women mussel harvesters have argued that overall, the government's response to the floods was inadequate, with minimal support beyond temporary housing and basic provisions. The women report that some residents are still in temporary housing. The roads have not yet been repaired (Masifundise fieldwork interviews, July 2024). Women, whose fishing livelihoods were disrupted, received no assistance to recover their economic activities. This neglect further highlighted systemic

failures in disaster response and support for vulnerable communities. The beaches continue to be closed at regular intervals after storms and heavy rains, leaving them insecure about the actual quality of the water and the dangers of harvesting mussels.

Despite the fact that small-scale fishing communities are often the most vulnerable to climate change, notwithstanding the fact that they have contributed the least towards the anthropogenic drivers of climate change (Allison et al 2009), there is no evidence that DFFE or any other authority has assessed the vulnerability of women mussel harvesters in KZN or taken any steps to support mitigation and adaptation strategies to assist them in coping with climate impacts. On the contrary, the attitude towards SSF in the province is revealed in the Status of the Coast Report section on SSF written by Lamberth and Mann (2022). In this revealing insert they make it clear that they don't know where the SSF cooperatives are but they do consider the SSF a threat to the recreational tourist fishery.

> "By February 2018, 2 184 small-scale fishers had been identified in KZN during the roll-out of the SSF policy initiative".... "The exact locality of these 35 SSF communities and the areas in which they can fish is not publicly known, nor are the details of the additional "basket of species" that fishers within each community may harvest" (Lamberth and Mann in Goble and van der Elst 2022: 132). They proceed to note that
>
> "Stock assessments of the main inshore linefish and invertebrate species have revealed that most already exist in a depressed state (Mann 2013, Steyn et al 2019), hence allocation of commercial rights to the SSF sector will result in additional pressure on these stocks. Equally disconcerting are the expectations of small-scale fishers which were raised during the roll-out of the SSF themselves. However, it is highly unlikely that the resource base allocated to them can sustain their livelihoods in the long-term. Moreover, the further decline in popular linefish stocks is likely to harm the recreational tourist fishery, one of this province's important sources of revenue (McGrath et al. 1997)" Lambeth and Mann in Goble and van der Elst 2022: 133).

An eThekwini Report as early as 2006 states that Durban is" *vulnerable to the impacts of climate change. It is likely that temperatures will increase 2-3 °C above current temperatures by 2100. Furthermore, the days with temperatures greater than 30 °C will also increase. Rainfall distribution is also expected to change with longer periods of no rainfall and shorter periods of intense rainfall. Sea level is also expected to change due to a warmer climate. Sea level is expected to rise by about 50 cm by 2100. These changes in the climate system of Durban have the potential to adversely affect human health, food security, biodiversity, infrastructure, economically significant areas along the coast and water resources. Incidents of flooding will increase creating damage to buildings and infrastructure, compounded by the fact that dams might contain insufficient water for the needs of Durban's population*".

Considering the awareness of the dangers of flooding from as early on as 2006, the government's response to the floods appears very inadequate. An examination of the eThekwini Municipality's climate change strategy however, is surprising. In 2012 the municipality developed a progressive climate change programme contained within the Municipal Integrated Development Programme (IDP), and in 2015 developed a city wide mitigation and adaptation strategy. From 2019-2022 the City undertook the first five-year review of the strategy and revised and updated the strategy. This

strategy is known as the Durban Climate Change Strategy (DCCS). This document reveals that the municipality was clearly aware of the dangers of increasingly frequent flooding.

"*As a result of the projected increase in average temperature, Durban may also experience increased evaporation rates. The projected increase in average temperature combined with increases in the evaporation rate pose notable risks for Durban, including water supply insecurity, increased frequency of floods and droughts, increased heat stress exposure, reduced water quality, increased vector-borne and water-borne diseases, loss of biodiversity, changes in species migratory patterns, and impacts on food production. . These impacts could be compounded by other drivers unrelated to climate change like inappropriate management of built and natural infrastructure, poor planning and poor governance*" (eThekwini DCCS 2022:iii).

This DCCS identifies food security impacts of climate change on fisheries stating

> "*Climate change is likely to have negative consequences for food security as it is expected to increase the frequency, severity and impacts of climate-related hazards such as heatwaves, storms, floods and droughts. Such climate-related hazards are likely to drive up food prices and increase food insecurity and hunger with a disproportionate impact on people living in poverty. Modeling the negative impacts of climate change as a result of greenhouse gas emissions, under a 'business as-usual' emission scenario, found that about 90% of the world's population will experience reductions in food production in both the agriculture and fisheries sectors*" (DCCS 2022:37).
>
> The DCCS has a gender differentiated strategy. It notes that "*women and men are differently impacted by climate change because of the different roles that they play in society as well as by existing levels of marginalisation"* (DCCS 2022:32).
>
> It further states that "*Durban's climate change response must also take a lead in addressing the vulnerability of people at increased risk of climate change impacts in combination with non-climate change risks (e.g. women at risk from gender-based violence, and how climate change can exacerbate these risks 32 . For instance, gender inequality intersects with poverty in Durban. In 2020, 42.1% of households in eThekwini were headed by women 33. These women-headed households are disproportionally impacted by poverty as 45% of female-headed households in Durban are living in poverty compared to 25% of male-headed households pp34 . Since poor households are particularly vulnerable to the impacts of climate change it can be expected that women-headed households will be particularly impacted by climate change. The strategy should ensure that Durban's response to climate change does not exacerbate existing inequalities between men and women and it should also seek to reduce the impacts of climate change on the most vulnerable members of society. The DCCS implementation plan does provide opportunities that have been shown over the past decade to be predominantly taken up by women from poor households. Examples include the city's Community Reforestation Programme (treepreneurs) and the Sihlanzimvelo Community Stream Cleaning project* (DCCS 2022:34).

In the light of this progressive strategy, the failure to respond to the needs of the women mussel harvesters and to include them in the DCCS is even more puzzling. Why are the women mussel harvesters so invisible to a local government that is aware of women's vulnerability, has a gender differentiated climate strategy, is aware of the potential impacts on food security and emphasizes the need to support food systems? To what extent has DFFE helped to promote cooperative

governance, lead climate change and disaster preparedness and make the provincial and local government aware of the existence of the women harvesters?

Section 9: Governance of climate change in the KZN coastal zone and its impacts on women in fisheries

South Africa's Constitution (1996), Bill of Rights, Section 24, recognises the right to a healthy environment balanced with sustainable development (Section 24). Several high court judgements have provided clarity and guidance on the interpretation of this human right, its intersection with other socio-economic rights such as the right to adequate housing (Section 26), to adequate food and water (Section 27) and the implications for government obligations (Murdock 2017,2024). Similarly, the intersectionality of human rights in the context of climate change has been confirmed in a range of international decisions. The International Tribunal for the Law of the Sea, (ITLOS), noted that climate change "raises human rights concerns", with two judges separately confirming that international human rights obligations are applicable to the protection of the marine environment from climate change, including the obligation to prevent disproportionate impacts on those in vulnerable situations[2](UN Special Rapporteur for Climate Change Report 2024). The OHCHR has clarified that States should take measures to protect the biodiversity of food sources and systems, and recognize the rights of Indigenous Peoples, and peasants and rural communities (A/HRC/55/37).

In 2022 the United Nations General Assembly adopted a resolution recognizing the human right to a clean, healthy and sustainable environment. This resolution has confirmed that 'the human right to a healthy environment includes the right to clean air, a safe climate, healthy ecosystems and biodiversity, safe and sufficient water, non-toxic environments, and healthy and sustainable food, as well as access to information, public participation in decision-making and access to justice" (Boyd, 2019 in Bennett, Morgera and Boyd, 2024:1). This link between the right to environment and to climate change has been confirmed and recognised in the South African Climate Change Act 22 of 2024 which states in its preamble that

"*everyone has the constitutional right to an environment that is not harmful to their health and well-being, and to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures that secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social developmen*t" (DFFE 2024 Preamble to the Climate Change Act)

Further, the recently adopted South African Climate Change Act 22 of 2024 notes that

"r*esponding to climate change raises unique challenges to effective governance as its impact transcends and challenges traditionally sectoral governance approaches, which require a nationally driven, coordinated and cooperative legal and administrative response that acknowledges the*

[2] Declarations of judges Infante Caffi and Pawlak, with the latter underscoring the relevance of the UN Human Rights Committee's *Torres Strait Islanders* decision and the ECtHR *KlimaSeniorinnen* decision for the law of the sea.

significant role of the provincial and municipal spheres taking into account the Intergovernmental Relations Framework Act, 2005 (Act No. 13 of 2005)" (RSA 2024:4).

It would appear that for women mussel harvesters living on the south coast of KZN, these human rights protections are at risk in the implementation of the Small-scale Fisheries Policy (SSFP) within the larger context of the climate emergency in part because of this failure of the national, provincial and local government spheres to fulfill their various Constitutional and other legal obligations. Of particular concern is the DFFE Directorate for SSF's failure to engage with the relevant KZN provincial and municipal government authorities and inform them of the recognition of SSF rights and ensure that the women harvesters are integrated into all levels of DFFE marine, coastal and estuarine planning, implementation and protection as well as into national, provincial and local level climate change planning and disaster risk management. Understanding of these various mandates at play is necessary in order to assess the adequacy of the various parties' responses to the plight of the women in 2022 and now and to identify where gaps have exacerbated their vulnerability. The following section provides a brief overview of the different departments and spheres of government responsible for climate change adaptation and mitigation and integrated coastal and ocean management, together with human settlement services in the coastal zone

9.1 Responsibility for governance of marine living resources and integrated coastal management

In terms of the Constitution, the Department of Forestry, Fisheries and Environment (DFFE) is the national government responsible for the governance of marine living resources and coastal management. The Marine Living Resources Act (MLRA) of 1998 governs the management and protection of these resources whilst the National Environmental Management Integrated Coastal Management Act (ICMA) 28 of 2008 and the ICM Amendment Act (36 of 2017) provides the legislative framework under which policy and regulations are adopted to achieve the implementation of the Act. Coastal governance is a cooperative governance process and much of the implementation responsibility is legally devolved to the provincial level, and to local government structures (2022). It is a complex process that requires the integration of several different policies and processes that must intersect with spatial planning by local or district municipalities under the Local Government: Municipal Systems Act (32 of 2000). These include Coastal Management Programmes, local development planning, and estuary zonation plans (ref). To achieve this level of integration the ICM Act outlines the framework for the establishment of a 'National Coastal Committee' (Working Group 8) which coordinates oceans and coastal management in South Africa. Below this, the Act required the establishment of a Provincial Coastal Committees (PCC), with Municipal Coastal Committees (MCC) being optional, should the local municipality require support.

9.2 Responsibility for the governance of human settlements in the coastal zone

Governance of the coastline and the various human developments that impact the coastal and marine natural resources is a complex arena as it includes both the environmental mandates and other mandates such as that of human settlements.

Human settlement in coastal areas requires specific planning to manage the impacts of these settlements and activities on coastal ecosystems, which in turn provide critical ecosystem services to those settlements. The interactions of human settlements with natural resources, environmental quality and sustainability are thus key (DEA&DP 2018). Sustainable human settlements therefore relate to environmental protection and the right to a healthy environment (Goble and van der Elst 2022). The provision of adequate and appropriate infrastructure in the coastal zone is an overlapping responsibility, with different levels of government fulfilling different roles, further necessitating good integration and cooperative governance. In South Africa, the local government has a responsibility to ensure adequate water.

According to the South African Human Rights Commision (2022), municipalities bear a significant responsibility for ensuring proper housing and infrastructure maintenance within its jurisdiction. The failure to repair and maintain the R102 road and train infrastructure since the 2022 floods illustrates a profound lapse in municipal governance and disaster preparedness. Adequate housing and transport infrastructure are fundamental rights that municipalities are obligated to uphold, yet Umgababa continues to face deficiencies in these crucial services, exacerbating the hardships faced by women engaged in small-scale fishing.

9.3 Responsibility for climate change adaptation and mitigation in South Africa

Climate change adaptation and mitigation adds an increased level of responsibility to the above marine resource and coastal management functions and processes for the Department of Forestry, Fisheries and the Environment. As has been highlighted by the IPCC in 2019, Oceans and Coastal areas are particularly vulnerable to climate change impacts (IPCC 2019). Despite this, South Africa has been slow to address climate change in the context of oceans, coastal and fisheries governance. In particular, there is no evidence to indicate that the state has adopted special measures to address the discrimination and vulnerability faced by women SSF in the context of climate change in compliance with international legal and policy obligations.

Ortega-Cisneros et al (2021) argue that the inclusion of climate change impacts and adaptation in fisheries management documents in South Africa is essential to ensure adequate climate adaptation responses are implemented in the short- and long-term. In an assessment of fisheries management and climate change documents to determine if they incorporated information on climate change impacts and adaptation and marine fisheries the authors found that “climate change impacts and adaptation are rarely incorporated in the main fisheries management documents” (Ortega-Cisneros et al 2021:1).

SSF communities in particular have been neglected for several decades and their pre-existing vulnerabilities cannot be ignored when addressing climate change threats and disasters. These communities face a myriad of stressors and threats, including socio-economic challenges, governance failures and, more recently, threats associated with climate change (Sowman & Raemaekers, 2018). These stressors (old and new) often act in concert, driving a complex web of vulnerability amongst communities (Sowman and Rebelo 2022).

Effective and equitable climate change planning and disaster risk management is a cross-cutting governance responsibility, impacting all levels of government that are relevant to the marine and

coastal environments and human settlements along the coast; however the DFFE is the lead Department carrying this responsibility. Sowman and Rebelo (2022) note that " Although the DEFF is responsible for the implementation of sustainability and climate adaptation objectives, it has failed to halt the activities of extractive industries, undermining its policies and strategies to mitigate climate change and adapt in the face of climate variability" (Sowman and Rebelo 2022:177). They argue that the disjuncture between the environmental impacts of mining and South Africa's commitments to mitigating climate change are very evident in the authorisation of permits to mine along the West Coast of South Africa as well as the authorisation of rights for oil and gas exploration. These actions reveal contradictions within the national government regarding the interpretation of sustainable development principles, which is further evidenced by the divergent framings and interpretations of the concepts between government departments (Sowman and Rebelo 2022:177). The continued neo-liberal blue growth and fossil fuel extractive policies of the current government undermine South Africa's commitment to the reduction of its carbon footprint.

South Africa now has an extensive climate change legislative and policy architecture. In July 2024, just over two years after the KZN floods, the President signed into effect the Climate Change Act 22 of 2024 for South Africa. This Act recognises that addressing climate change is a cooperative governance task, whilst the DFFE is currently recognised as the lead agent. Every organ of state has a responsibility to contribute towards achieving the objectives of the Act.

The Act states in Section 2 (f)

> "*the need for decision-making to consider the special needs and circumstances of localities and people that are particularly vulnerable to the adverse effects of climate change, including vulnerable workers and groups such as women, especially poor and rural women, children, especially infants and child headed families, the aged, the poor, the sick and persons with disabilities*.
>
> In addition, every Province will have a Provincial Forum on Climate Change, as will every municipality have a Municipal Forum on Climate Change (Act 22 0f 2024).

This Act intends to provide a coordinated response to climate change, strengthen resilience, mainstream adaptation, contribute to reducing greenhouse gas emissions, transition towards a low carbon economy, deliver international commitments, and preserve the planet (Hyder et al 2024). The Act will bind all organs of state and prevail over other legislation where there is conflict. Other instruments to support climate adaptation include the National Climate Change Adaptation Strategy (2020), Sectoral Adaptation Response Plans that should include fisheries, as well as local climate adaptation plans which are currently in preparation (Hyder et al 2024).

Hyder et al (2024) have argued that currently communities are largely not included in climate change interventions in South Africa and there is a need "to integrate local and indigenous knowledge and experience into adaptation plans which are currently formulated by scientists and managers" (Hyder et al 2024:2). Further, they argue "there is currently inertia in policy due to the fragmented nature of directorates alongside issues that cut across many legislative areas, with limited funding and resources to deploy" and "solutions are developed in isolation from the community, lack the longevity of funding, are not scalable, and without the appropriate skills" (Hyder et al 2024:2).

Section 10: Analysis of the case of the climate change impacts on women SSF mussel harvesters

10.1 The climate impacts experienced by women mussel harvesters

The 2022 flooding in KwaZulu-Natal (KZN) starkly illustrates how climate change can exacerbate existing vulnerabilities, disproportionately impacting women engaged in SSF. The floods had devastating effects, destroying homes, contaminating beaches, and disrupting essential services. In Umgababa, a community predominantly inhabited by women who rely on mussel harvesting, the floods caused severe displacement and economic hardship. The contamination of the ocean with pollutants, including hazardous levels of E. coli, rendered the mussels unsafe for consumption, directly threatening the livelihoods of these women. The loss of viable harvestable mussels not only affected their income but also their ability to fulfill their traditional roles in food provisioning and care work within their households and communities. These threats have also been experienced by other women SSF harvesters in the four neighbouring SSF cooperatives along the south coast (pers.comm Coastal Links KZN leaders July 2024).

The displacement caused by the floods forced many women to seek alternative means of supporting their families. This shift underscores the precarious nature of their economic activities and the limited safety nets available to them. The government's response, while providing temporary housing and basic necessities, fell short of addressing the long-term needs of these women. The lack of sustained support and the absence of measures to restore their livelihoods highlight the systemic neglect of women's contributions and the socio-economic barriers they face.

From a human rights perspective, the circumstances faced by women in Umgababa due to the flooding represent significant infringements on their basic rights. The right to food security is compromised as the pollution and environmental damage directly affect their ability to harvest mussels, their primary source of sustenance. The right to a clean, healthy, and sustainable environment is also violated, as the flooding and subsequent pollution degrade the natural resources they depend on. Furthermore, the displacement and loss of livelihood opportunities undermine their right to work and economic security (Nhamo, 2014; Institute for Security Studies, 2023).

The broader implications of these infringements extend to the social and economic stability of the entire community. As primary providers, women in SSF play a critical role in maintaining household and community well-being. The disruption of their economic activities due to climate change not only threatens their individual security but also the resilience of the community as a whole (Nhamo, 2014; ISS, 2023).

It is argued that the severe impact of these floods was not solely due to extreme rainfall, but also to pre-existing issues like water saturation, degraded waterway conditions, and poor urban planning. These systemic issues hinder effective disaster preparedness and response, exacerbating the adverse effects of natural disasters on vulnerable populations (Abdinor & Sithole, 2024).

Poor land use management, characterized by unregulated development and inadequate infrastructure, has led to increased runoff and reduced natural absorption of rainwater, making communities more susceptible to flooding. Inadequate waste management practices further compound these issues, leading to waterway blockages and increased pollution, which degrade

marine ecosystems and directly impact the livelihoods of women who depend on these resources (Abdinor & Sithole, 2024; Sutherland, 2024).

Moreover effective land use planning and infrastructure development are critical to mitigating the impacts of climate change and protecting the livelihoods of SSF communities. This includes implementing comprehensive drainage systems, improving waste management practices, and ensuring that urban development does not compromise natural flood defenses (Abdinor & Sithole, 2024; Sutherland, 2024).

Additionally, the delivery of essential services such as clean water, sanitation, and adequate housing is crucial for enhancing community resilience. The failure to provide these services not only exacerbates the immediate impacts of disasters but also undermines long-term recovery efforts, leaving communities in a state of perpetual vulnerability (Abdinor & Sithole, 2024; Sutherland, 2024).

The socio-economic barriers and climate-related challenges faced by women in SSF are compounded by inadequate implementation of supportive legislative and regulatory frameworks. The ICMA Act of 1998 and the MLRA, in the context of the White Paper on Climate Change at the time of the floods, coupled with the Constitutional provisions and international legislation and policy, such as the SSF Guidelines, provided clear direction for the State to respond proactively and address the women mussel harvester's situation yet there remained significant gaps in their enforcement and effectiveness.

Despite the robust legal frameworks presented in Sections 2 and 3 above, the 2022 flooding in KZN reveals significant gaps in their practical application. The displacement and loss of livelihoods experienced by women in Umgababa highlight the urgent need for effective implementation of these policies and international commitments. Ensuring that women have access to clean, healthy, and sustainable environments, as well as secure and dignified livelihoods as part of the specific measures needed to build climate adaptation and resilience, requires concerted efforts at all levels of governance.

10. 2 Concerns regarding gaps and failures in the governance of the coastal zone in KwaZulu Natal with critical implications for the climate change impacts affecting women mussel harvesters

The State of the Coast Report for KZN published by the Provincial Department of Environment in KZN in 2022 presents key findings relating to the state of the KZN coastal zone, according to seven main themes: overarching, climate variability, coastal environment, marine environment, economic environment, human environment and governance. It identifies cross-cutting issues which may have the potential to greatly disrupt the normal processes. These include climate change, coastal sand mining, oil and gas exploration and changes in human settlements. In addition, possible emerging issues, such as water quality and new diseases relating to mariculture and mining operations may be encountered (2022: 227). It was reported in this Provincial State of the Coast Report (2022) that

"the implementation of the ICM Act remains a challenge for KZN (Goble et al. 2017 in Goble and van der Elst 2022), underpinned by a lack of staff and funds available and that "**Improved coastal management for KZN is critical**; this requires additional human and financial resources"....and that "***the advent of climate change, growth in tourism and the increased Blue Economy-sponsored***

industrial development is resulting in increased pressure on the KZN coastal environment. Thus, urgent action is required and improved political will is essential" (emphasis our own) (Goble and van der Elst 2022)***.***

Most alarming, it was reported that the KZN Provincial Coastal Committee, a mandated standing committee, was "non-operational for several years, with the procedures for its re-establishment turning slowly". In addition, the established sub-committees, such as the estuaries subcommittee, stopped functioning for a period prior to the floods completely (2022).

This assessment of the coast noted that KZN has "high levels of poverty, especially in informal settlements, with reduced access to sanitation and waste management services, resulting in untreated waste and litter entering rivers and streams and ultimately into coastal environments" (Du Plessis and Landman 2002). Further, increasingly, the KZN coast (particularly off Durban) has received excessive raw sewage, polluted stormwater and litter (mostly plastics), due to failing infrastructure, flooding after storm events and electricity outages. Other serious pollution incidences are increasing such as oil and chemical spills, the most disastrous being the UPL spill of agrochemicals in July 2021 (Section 2.3). Pollution enters the KZN shelf via estuaries, subterranean freshwater flow (e.g., Porter et al. 2018) and marine outfalls (Goble and van der Elst 2022:113-114). Goble and van Der Elst, writing for the KZN State of the Coast Report, assert that "There needs to be a paradigm shift as to the way we generate, dispose and accept responsibility for solid waste."

It appears that at the time of the floods, there was little oversight and inadequate implementation of the ICMA requirements. A key issue in KZN is the lack of cooperative, integrated governance. In particular there is a lack of effective communication and oversight by the DFFE Fisheries Branch as it would appear that none of the other spheres of government are even aware that there are women mussel harvesters in this region. Given that the Climate Change Act highlights that intersectoral, cooperative governance lies at the heart of South Africa's climate change adaptation and preparedness strategy, this is most worrying. Is this the cause of the apparent lack of awareness within the eThekwini municipality of the existence of the mussel harvesters? Or the specific vulnerability of these women harvesters to negative impacts on their health, food security and livelihoods? Despite the Durban Climate Change Strategy identifying small-scale food producers and subsistence fishers as vulnerable to climate impacts, there is no vertical and cross-sectoral functionality that enables women mussel harvesters to be caught in the supportive net of climate change adaptation and mitigation in the municipality. Instead they remain invisible and are falling through the net due to the failure of integrated governance in this province.

Neither DFFE Oceans and Coasts branch at national level, nor the Provincial Department appear to have taken up the recommendation by the Water Commission Researchers (Newman et al 2015) of the need to engage with mussel harvesters to understand their harvesting practises and the potential dangers of carcinogenic and toxic contamination of the mussels that they are consuming and possibly selling. On the contrary, as recently as 2022 a key DFFE scientist, Dr Stephen Lambeth stated in a provincial report that neither he nor Ocean Research Institute knew the locality of the SSF fishers in KZN or what was in their baskets. This begs the question -who made the scientific recommendations and sat on the committee that made the decisions to allocate mussels to the SSF? DFFE SSF Directorate stated that there were scientific recommendations that informed the basket of resources (GPR 2020). However, it would appear that DFFE Fisheries Branch and DFFE Oceans and Coasts are gravely out of touch with the needs and interests of SSF mussel harvesters in KZN. Considering

the health implications of their neglect of this sector this would appear to be a significant failure to fulfill their human rights and climate change mandates.

The Provincial State of the Coast report (2022) creates the impression that at the time of the floods there was minimal enforcement and compliance with the ICMA requirements for coastal plans. This is evidenced by the fact that 70% of the estuaries in KZN are not compliant with the NEMA Estuary Management Protocol as they do not have formal management plans (Goble and van der Elst 2022). It indicates that "current governance frameworks are under-resourced" and that "greater enforcement of legislation is important in improving overall governance and compliance". Additionally, "governance frameworks need to be clear: who is responsible for management, inspection, and enforcement. National protocols and procedures must be put in place to ensure that due process and international best practice is followed". The Report indicates that steps should be taken to "incorporate better management practices as pressure increases to develop the sector in KZN"....and " Of critical importance is that the KZN PCC and subworking groups need to be re-established. These bodies can guide, advise and provide scientific support for the implementation of such plans for the KZN province".

The State of the Coast Report further states that "implementation of legislation is adequate, but compliance and enforcement are mostly poor" (Taljaard et al. 2019 in Goble and van der Elst 2022). However critically, the Report states that '' Management responses to specific pressures such as EWRs, EMPs, MMPs, **and climate change mitigation** (our emphasis) have either not been developed or have not been implemented" (Van Niekerk et al. 2019a). The Report notes that water quality monitoring under the National Estuarine Monitoring Programme (NEsMP) of the Department of Water and Sanitation established in 2008 needs to be re-initiated. It reports specifically that "Treatment interventions are needed at Isipingo where wastewater effluent and increased plastic pollution is having a detrimental impact on rocky shore communities (Olbers 2017)" and that biomonitoring such as Mussel Watch should be reinstated in KZN to monitor indicator species for water quality and heavy metal pollution" (Goble and van der Elst 2022:86).

Most alarming is the section on Pollution in Estuaries. This states that "estuaries are the most polluted coastal habitats in KZN (Section 2.3). In KZN, wastewater discharges, urban runoff and agricultural return flows are considered the most significant pollution pressures. Of KZN estuaries, 39% are under high to very high pollution pressure." The frequency of major pollution incidents in estuaries has increased significantly in the past few years. In this Report on the State of the Coast Umgababa is listed as an ENDANGERED estuary. It notes further that "current monitoring and enforcement is inadequate".

Conclusion

The State of the Coast Report for KZN (2022) paints a shameful picture of the failure of the DFFE and its provincial partner to fulfill its mandate to promote an integrated, healthy, safe and sustainable coastal environment, protect the ocean, coastal and estuarine ecosystems, build climate resilience and protect vulnerable communities in the face of climate change. Whilst the eThekwini Municipality has a clear, recently updated Disaster and Climate Change Strategy (EThekwini DCCS 2022) that identifies subsistence fishers and women as vulnerable, there is no evidence that the municipality is even aware of the approximately 300 women mussel harvesters who depend on the intertidal zone

for their food security and livelihoods along this coastline. The devastating floods of April 2022 laid bare the real vulnerability to climate change of women SSF: the continued invisibility of the SSF sector in a country that has always prioritized the commercial and recreational fisheries sectors at the expense of the poor, coupled with pervasive prejudice against this sector amongst marine scientists, the continued reluctance of the state to limit the number of recreational mussel harvesters and give preferential access to limited resources to the SSF fishers, together with the growing threats of development along the coasts, driven by Blue Growth and an unfettered neo-liberal growth and extractive mentality and a Department of Forestry, Fisheries and Environment that has failed to fight for high level political will to ensure that the Policy for SSF gains traction. The fact that this was stated clearly in the Provincial government's own report in 2022 is surely evidence of this failure: "***the advent of climate change, growth in tourism and the increased Blue Economy-sponsored industrial development is resulting in increased pressure on the KZN coastal environment. Thus, urgent action is required and improved political will is essential."***

In this context, climate change is not only about the environment, but it is as much about these toxic unequal power relations that epitomize the neo-liberal, extractive, capitalist approach to development that is the KZN sea and land-scape, 30 years after the first democratic elections.

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