An exploration of the post-harvest activities of the Olifants Estuary Small-Scale Fishery: Recommendations for equitable market access and beneficiation

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Declaration:

I declare that “An exploration of the post-harvest activities of the Olifants Estuary Small-Scale Fishery: Recommendations for equitable market access and beneficiation” is my own work - that it has not been submitted for any degree or examination in any other university and that all sources I have used or quoted have been indicated and acknowledged by complete references.

Tayla Louw 16 August 2020

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Abstract:

Small-scale Fisheries (SSFs) play a key role in poverty alleviation of rural coastal populations through the provision of food security and income generation. Yet, many SSFs fail to maximise the value potential of the seafood products they produce as a result of post-harvest losses and marketing challenges. SSFs within South Africa are no exception and are particularly disadvantaged as a result of historical discrimination, marginalisation, management, data deficiencies and inequitable market access. The financial, technical and information challenges that characterize small-scale fisher households present many barriers to accessing and maximizing market opportunities. Worldwide, and in South Africa, understanding of post-harvest losses, limitations and market constraints, is limited. Therefore, this research aims to better understand the post-harvest activities of the small-scale fishers of the Olifants estuary in order to identify opportunities for value addition and improved market access. A mixed-methods approach was employed including analysing data from community fisher logbooks and conducting semi-structured interviews with both fishers and marketers.

This research has demonstrated that inadequate facilities, lack of technology and transport as well as limited knowledge have all contributed to post-harvest losses and affected the income potential for these fishers. Inequitable market forces have been shown to exist in the Olifants fishery value chain. Consequently, these small-scale fishers are price-takers since they lack the capacity required to participate in value chain negotiations and development. Furthermore, these fishers are vulnerable to the consequences of poor governance, the vagaries of marketers and the misperceptions and preferences of consumers regarding their fish products. Recommendations include building capacity and skills of the Olifants fishers to professionalise their operation, adjusting several of their post-harvest activities and incorporating those suggestions offered by the marketplace that are achievable.

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This journey has taught me to restrain my ideals with wisdom and to embrace my life afresh with an unwavering gratitude. To say I have been humbled would be an understatement.

Image 1: Fisher meeting to discuss the progression of the research, and issues which faced the community at the time. **Photograph:** Casha De Vos, 17 December 2019.

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Chapter 1:
Introduction

1.1. Background

Fisheries are important for livelihoods, trade, health and nutrition across the globe (Béné et al., 2015). Many coastal populations around the world depend upon seafood as a vital source of protein and income (FAO, 2014; Béné, 2016); this is especially prevalent among rural coastal populations where Small-Scale Fisheries (SSFs) are prominent. Regarding health and nutrition, a third of the world's population depend upon marine and aquatic products for at least 20% of their protein intake (Badjeck et al., 2010). It is estimated that 400 million of the world's poorest people depend on fish to provide over 50% of all their protein and nutritional needs (Béné et al. 2015; FAO, 2018). Most of these fish-consuming peoples live in low-income countries that are characterised by food insecurity (Welch et al., 2010). Therefore, fish supplies are critical to providing food security for much of the world's poor - especially in areas situated along the coast (Williams and Rota, 2019).

The key factors that govern access to and rights of coastal fishing populations to marine living resources that surround them are firstly, the state of the ecosystem (Worm et al., 2009), and secondly, the institutional context governing these systems (Allison and Ellis, 2001). These two factors overwhelmingly dominate the economic opportunities and disparities that arise both from the activity of fishing and subsequently from post-harvest activities (Barnes-Mauthe et al., 2013). It becomes critical then to understand the drivers behind global and local seafood trade and its players (Crona, 2010; Garcia and Rosenberg, 2010), the behaviour of fishers (Salas and Gaertner, 2004; Naranjo-Madrigal et al., 2015), the post-harvest activities of small-scale fishers (Adeolu et al., 2017) and the distribution of financial benefits among stakeholders in the fishery value chain (Wamukota et al., 2014). A firm grasp of these drivers is vital to inform appropriate strategies necessary to improve the post-harvest environment and enhance beneficiation of fish products harvested by vulnerable coastal fishing communities.

Small-scale fishers employ traditional basic technology that is labour intensive. These fishers generally sell their catches at local markets (Berkes, 2002; Sowman ,2010). Worldwide, small-scale fishers face a plethora of challenges at the post-harvest stage of the fishery value chain that have social, economic and ecological impacts and implications for their livelihoods (Petrik and Raemaekers, 2018).

This fishery sector is entrenched in complex, dynamic and interactive linkages, otherwise referred to as value chains, of supply and trade that connect production to consumption (Rodrigues and Villasante, 2016). Value chains involve all those processes that add value to the product along the supply chain, whilst creating employment at each node of addition (Jacinto and Pomeroy, 2011). The analysis of value chains reaches further than the analysis of isolated actors in the chain to incorporate an exploration of the relations between actors, their respective activities and interactive connections (Porter, 1985). The analysis of value chains enables the acknowledgement of concealed linkages, feedback loops and emergent properties at play within socio-ecological systems (Rodrigues and Villasante, 2016); yet such studies are rare in fisheries science, most particularly in the SSFs of developing countries (Bjørndal et al., 2014). Nonetheless, empirical evidence confirms that the scrutiny of value chains provides insight into the flow of financial returns between the actors in a chain; such transparency can be used to inform policy and decision-making (Cronan et al., 2010; Rodrigues and Villasante, 2016).

Moreover, analysis of the post-harvest sector of the value chain can disclose the effects of trade on marine living resources (Brewer, 2011, Thyresson et al., 2013), as well as the financial inequalities that often exist between trade actors (Moustier et al., 2010; Wamukota et al., 2014). The exposure of differential pricing along the value chain and the drivers thereof, is essential to address the socio-economic power dynamics that exist in the chain (Garcia and Rosenberg, 2010). These power dynamics may be driven by various factors, such as high human population density, demographic growth and a deficiency in alternative livelihood opportunities for fishers – these dynamics can adversely affect the marine resources upon which the socio-ecological system depends (Brewer et al., 2009; Kronen et al., 2010; Brewer et al., 2012, Cinner et al., 2013). In the same way, local markets can cause the harmful degradation of fisheries resources and their subsequent decline; most notably for those markets located near the resources (Brewer et al., 2009; Brewer et al., 2012; Cinner et al., 2013) and with the greatest market access (Stevens et al., 2014).

Research that has been conducted on SSFs tends to focus more on the ecological impacts of the fishery sector, with little focus on the social dimensions such as gender disparities, thus excluding key aspects in the value chain (Petrik and Raemaekers, 2018). Petrik and Raemaekers (2018) highlight that some of the most prominent challenges that these fishers experience is the insufficient communication or knowledge sharing that often serves to disregard the voice of fishers in decision-making that affects their livelihoods. Moreover, the challenges in SSFs are expounded upon by the deficiency of data for the sector - which is either altogether incomplete, missing or extrapolated from inadequate data sets

(Petrik and Raemaekers, 2018). There are challenges in attempting to appropriately address these challenges because of a lack of data necessary to inform governance decisions, along with the disempowerment and exclusion of small-scale fishers in management systems (Petrik and Raemaekers, 2018).

Within South Africa, small-scale fishers have a long history of marginalisation (Sowman et al., 2014). This marginalisation stems from their ongoing exclusion from the marine commons following decades of industrialisation, institutional racism, and increasing privatisation of marine resources through various policy mechanisms (Sowman et al., 2013). However, despite a progressive Constitution advocating for more equitable access to marine resources and a new Small Scale Fishing (SSF) Policy (2012) requiring legal recognition and protection of small-scale fisher rights, small-scale fishers continue to be marginalised within South Africa (Benkenstein, 2013; Sowman, 2015). Important decisions around access to and management of marine resources remain centralised and non-transparent and fuel a powerful marketplace ideology in favour of commercial interests (Sowman et al., 2014).

1.2. Study Area: The Olifants Estuary and Gillnet Fishery

While the study area of this research is discussed in more detail in Chapter 3, this section provides a brief overview of the Olifants estuary. Situated on the west coast of South Africa, the Olifants Estuary is located nearly 350 kilometres north west of Cape Town. This estuary is home to a traditional gillnet fishery for mullet (*Lisa richardsonii*), known locally as 'harders'. These resources are harvested by the people of Ebenhaeser who live in various settlements along the river (see Figure 1). Despite their geographical separation linked to the community's history of relocation, the fishers of Ebenhaeser are considered part of one community. Most fishers reside in Olifantsdrif (located next to the town of Ebenhaeser, about 18km upstream of the river mouth) and Papendorp (located adjacent to the river mouth). There are around 1200 households in the Ebenhaeser and Papendorp settlements (Williams, 2013). These settlements have limited infrastructure, and so residents must travel to the towns of Lutzille or Vredendal for various goods and services, as well as to sell a portion of their catches (see Figure 1) (Sowman, 2003). Although traditional fishers have lived at and around the estuary for generations, in 1925 they were forcibly relocated from the fertile banks of the river further upstream to the more saline and lower reaches of the estuary (Sowman, 2003, Carvahlho et al., 2009). As a result

of this relocation, traditional fishers became more dependent on the fish and continue to depend upon the estuary for their food security, income and livelihoods (Sowman, 2003).

Gillnet fishing has been conducted in the Olifants estuary for over 100 years (Sowman, 2017) and as such the fishing tradition is a defining characteristic of the Ebenhaeser communities. Fisheries scientists and conservationists have been trying to close the gillnet fishery of the west coast to preserve the ecological integrity of the line-fish stocks that enter the Olifants river, yet have faced challenges from the fishing community with the support of researchers and non-governmental organisations (Hutchings and Lamberth, 2002a; Purchase and Hutchings, 2008). The Olifants estuary gillnet fishery (OEGF) supports over a hundred families although there are only 45 legal permit holders. These permits make provision for an additional fisher on the boat at the time of fishing, locally known as a 'bakkiemaat' (i.e., crew member), thus resulting in a total of 90 legal fishers allowed on the Olifants estuary (Rice, 2017). This fishery is managed using a Total Allowable Effort (TAE) strategy which regulates the mesh size and net length employed as well as prohibits the harvesting or retention of any bycatch species (Rice, 2017). Research over time has shown an increased dependence of the community on fish resources for their livelihood and food security (Sowman, 2003, 2009, 2017). However, those dependent on the Olifants gillnet fishery enjoy very little disposable income and merely subsist (Sowman, 2003, 2009; Hushlack, 2012; Williams, 2015).

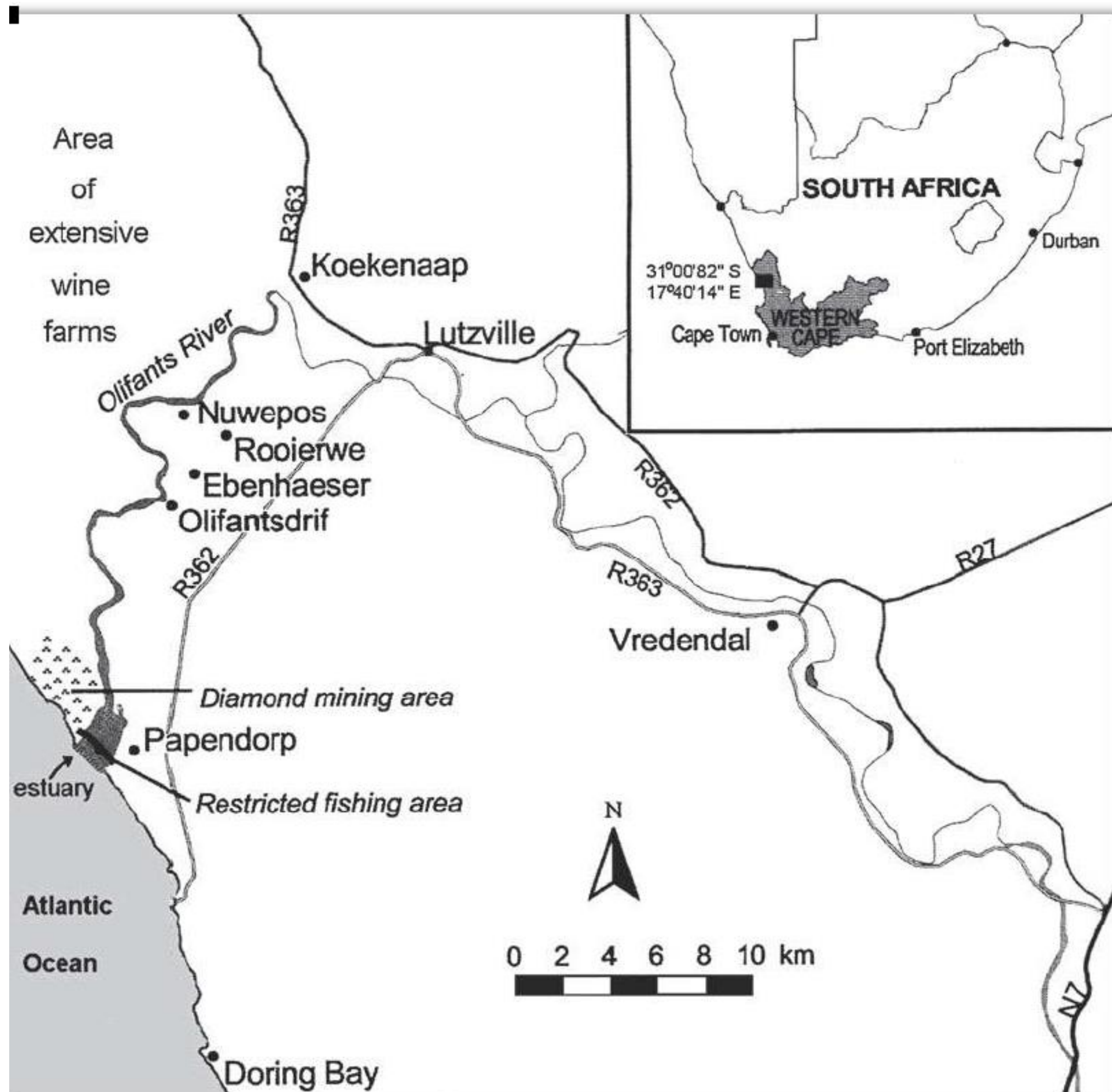


Figure 1. Map indicating the location of the Olifants Estuary Gillnet Fishery (OEGF), in the Western Cape, South Africa (Source: Sowman, 2009).

1.3. Study Rationale and Research Question

The transactional engagement of small-scale fishers is often defined by a financial value, as in the price at which fish is sold (Purcell et al., 2017), or the proportion of overall financial value obtained by the fisher (Trinidad et al., 2014). From this perspective, fishers become closely identified with the financial aspect of marketing their catch (Rosales et al., 2017). Small-scale fishers across South Africa face a range of significant challenges to generate enough income to support their households' basic needs (Fabinyi et al., 2018). The characteristic lack of financial resources and capacity of small-scale fishers mean that they struggle to add value to their products and remain subject to the prices offered by

marketers (Fabinyi et al., 2018) - earning the title of 'price-takers' because of their weak negotiating power in the setting of prices.

Exploring the socio-economic drivers within the SSFs value chain can provide insights that would inform reducing financial discrimination and losses encountered in the value chain. This information could also enable the development of strategies to ensure food security and livelihoods of fishing communities are improved. It is particularly important to investigate the post-harvest activities of small-scale fishers since it is at this stage of the value chain, that much value is lost (FAO, 2012, 2018). Unfortunately, due to the data deficiency in SSFs the world over, little is known about this stage of the SSF value chain (Kolding et al., 2014). Equally in South Africa, post-harvest activities have been understudied.

The financial, technical and capacity challenges that characterize small-scale fisher households at the Olifants estuary present many barriers to accessing and maximizing market opportunities. The lack of transport and facilities necessary to maintain the quality of catches, as well as the lack of skills to negotiate fair prices or build connections with higher-end marketers are some of the challenges facing this fishing community. Thus, in order to change the norm of small-scale fishers being 'price-takers' and vulnerable to receiving the short end of the value chain as a result of weak negotiating powers in the marketplace, the potential to enhance the value of the fish caught needs to be explored. Moreover, it is imperative to investigate the opportunities that exist to minimise post-harvest losses so prevalent in this particular fishery.

The current post-harvest limitations and market opportunities or constraints that characterize the Olifants harder fishery are not well-understood. Since fishing is central to survival and intrinsic to the identity and way of life in this community, measures for improving the benefits they derive from the fishery are required. Addressing the losses and unfair practices in the post-harvest process can contribute to tackling the inequalities that exist in the Olifants fishers' current markets.

1.4. Research Aims and Objectives

This study therefore aims to better understand the post-harvest activities of the Olifants estuary small-scale fishery (SSF) in order to identify opportunities for value addition and improving market access. The studied community deals with the Olifants harder fishery; this fishery encompasses fishers from two separate locations, i.e., Olifantsdrif and Papendorp. The specific objectives are therefore:

1) to understand how catches are used and distributed once landed,
2) to investigate the processes and activities of fishing from capture to consumption, with a focus on post-harvest activities,
3) to understand the challenges affecting the value, sale and distribution of the fish and seek ways to address these constraints,
4) to explore what potential markets exist, the markets' purchasing power and the form of products they seek, and
5) to offer proposals to enhance product beneficiation and market access of fish products.

1.5. Research Ethics

In order to ensure sound ethical practices were adhered to, this research follows the Code for Research Involving Human Subjects developed by the University of Cape Town. This study emphasises transparency, confidentiality, objectivity, and voluntary approval (Agar, 1996). The fishers supported the project, as information on barriers and opportunities to better access markets for their catch is a key issue of considerable interest to them.

Furthermore, the approach to this study sought to uphold the highest levels of trust and instil confidence with sharing interviewee knowledge. Consequently, the researcher used participant consent forms to inform interviewees about the nature of the research and explained participants' involvement, tentative risks and potential benefits gained through participation, and included a participant statement that confirmed agreement to participate in the research. Anonymity was assured for all interviewees and all participants were informed that they could withdraw from the study at any time. All those that participated in the study, including the fisher interviewees, willingly gave their verbal consent. The researcher also committed to presenting the findings of the research to the fisher community once completed. This feedback process has been delayed due to the constraints imposed by the COVID-19 health crisis.

Chapter 2:
Literature Review

2.1. Laying the foundation: Understanding complex socio-ecological systems

Environmental problems are often referred to as "wicked problems" (Jentoft, 2007), i.e., complex systems problems that involve the interaction between natural and human systems. Furthermore, environmental problems are increasingly being acknowledged as requiring broad and multi-faceted responses to solve. Various authors argue that there needs to be a shift away from a rationalist and positivist approach that has dominated the modern era (Cilliers, 1998) towards a more complex systems-orientated approach to solve contemporary environmental problems (Cilliers, 2000; Burns and Weaver, 2008; Berkes, 2015).

Contradicting modernist convictions that the world is homogenous and ordered, complexity thinking suggests instead that the world is chaotic, uncertain and non-reductionistic; that there exist no absolute points of reference, but instead several contradictions and contingencies (Burns and Weaver, 2008). Various scholars have begun to use terms such as 'linked socio-ecological system' (Berkes, 2002, 2009, 2015) and 'coupled human and natural systems' (Liu et al., 2007). Socio-ecological systems are argued to be complex systems that have non-linear relationships and uncertain phenomena; they are open systems whose boundaries are difficult to define (Cilliers, 1998). This author contends that complex systems are hierarchical, evolving and self-organising systems whose past is often a good indicator of its future. Since SSFs comprise diverse components that interact at various temporal levels, and at multiple scales (Berkes, 2002), they are considered complex socio-ecological systems.

2.2. Considering the importance of SSFs and its subsequent challenges

SSFs are an important and indispensable component in the fisheries sector (Petrik and Raemaekers, 2018) that sustain and generate the nutrition, livelihoods, employment and income of an estimated 250 million people around the world (Béné, 2006; Berkes, 2009; Jentoft and Chuenpagdee, 2015). SSFs are estimated to employ over 50 million people worldwide, most of which represent rural poor communities in developing countries (FAO, 2018). In Africa alone, it is estimated that SSFs employ around 10 million people directly and 90 million indirectly – with 200 million people reliant on these fisheries for food security (AUC-NEPAD, 2014). On a national level, SSFs comprise an incredibly

important sector for their contribution to livelihoods – yet SSFs present a complex array of challenges linked to their governance (Petrik and Raemaekers, 2018).

The SSF sector is associated with low capital and traditional or low technical equipment that demand high labour intensity often by seasonal and migrant workers, sometimes involving dangerous working conditions and remote landing sites with low quality infrastructure. Small-scale fishers often form an integral defining role in the rural and coastal communities in which they reside (DAFF, 2012). However, many of these fishers derive their income from a variety of activities because their fishing profits alone are insufficient to support even a very simple livelihood (Schuhbauer and Sumaila, 2016; Sumaila et al., 2016). These supplementary activities, however, generally include insecure wage labour for minimum pay without any prospects for improvement, state grants or alternatives in the service sector (DAFF, 2012). This suggests that although fishers have benefited from legal access to marine resources worldwide, the sector continues to have negative social and economic impacts upon small-scale fishers (Charles, 2011). The dependence of small-scale fishing communities upon fish protein for their diets is a result of the lack of availability of alternative sources of food and employment, together with a weak economy worldwide, though this varies from place to place.

SSFs consequently lack formalised data that provides a record of catches, effort and fishery changes over time (Petrik and Raemaekers, 2018). The very resources upon which these small-scale fishing communities depend are subject to increasing pressures due to population growth and other human activities (e.g. mining, tourism and coastal development) as well as the effects of climate change (Salas et al., 2007). Within South Africa, SSFs also remain characterised by unreliable and scarce data - an indication of the neglect on behalf of state management authorities to address the challenges of this fishery sector (Sowman et al., 2013). On top of this, the potential of SSFs to contribute to sustainable fishing practices within South Africa's fishing industry has often been overlooked (Sunde and Raemaekers, 2010).

Moreover, SSFs are characterised by marginalisation in value chains since they are largely powerless to negotiate equitable terms of incorporation in these value chains and unable to access credit to harness cold chain infrastructure (Bush and Oosterveer, 2007; Ponte, 2008). Furthermore, they are often less capacitated to comply with market food safety, traceability and eco-certification requirements (Béné et al., 2010; Pérez-Ramírez et al., 2012; Bjørndal, 2014; Bailey et al., 2016b). Frequently subjected to conflictual and complex relationships with other actors in the value chain, small-scale fisher livelihoods are generally associated with low wages and reduced bargaining power.

Fishers' inability to negotiate more favourable conditions in the value chain is inextricably linked to their associated socio-economic status and relations with their buyers (Petrik and Raemaekers, 2018). For instance, supportive relations between fishers and their immediate buyers grant fishers access to markets for their fish, but this access is often accompanied by the cost of equitable distribution of market benefits (e.g. Bush, 2004; Bailey et al., 2016). According to Bjørndal et al. (2014) and Adhuri et al. (2016), inequitable patronage relations should be overcome by building resilience within SSFs and to empower small-scale fishers to upgrade their standing in value chains by either improving the value of their products and/or reducing the impacts of unfavourable trading relations.
All these factors collectively shape this sector to be particularly vulnerable to the effects of poor governance, inequitable market relationships and climate change at all levels (WorldFish Center, 2007).

2.3. Understanding the post-harvest activities of SSFs

Fish is an easily perishable food commodity; no other food product presents as much observable evidence of loss from capture to consumption although this fact has not been well-documented (Kumolu-Johnson and Ndimele, 2011; Kruijssen et al., 2020). Additionally, fish passes through multiple hands from catch to consumption. Post-harvest losses occur from harvest to consumption in all fishery sectors, even the most sophisticated operations (Ward and Beyens, 2012). However, the types of losses, vary between fisheries sectors (Ward and Beyens, 2012). These authors identify three types of fisheries product losses, namely physical, quality and market force losses. Physical losses are described as fish that is discarded either accidentally, voluntarily or may even be authorised, or the fish is eaten by insects or other animals. Of more pertinent concern in SSFs is that of quality and market force losses. Quality loss is defined as the loss associated with product changes due to spoilage or physical damage although the fish is still sold, but at a reduced price. Market force loss denotes loss induced by market changes or developments where the fish producers are forced to sell their products, even those of good quality, for a price below their expectations and market value.

All three of these losses have financial implications for the different actors in the supply chain and beyond, since reduced revenue for fisheries operators can collectively have an impact on the macroeconomics of the country (Akande and Diei-Ouadi, 2010; Norman-López and Pascoe, 2011; Torell et al., 2020). In addition to financial implications, such losses can impact communities dependent on the fishery for food security and livelihood, as well as impacting marine resources as the potential of the resource to support livelihoods is compromised.

A critical difficulty has been the accurate assessment of post-harvest loss of fish in SSFs the world over – exacerbated by the general absence of catch monitoring and recording by fishers, even those operating with valid licences (Petrik and Raemaekers, 2018). These losses prevalent in SSFs are the result of very complex origins - that demand novel approaches to be overcome. Akande and Diei-Ouadi (2010) discuss how losses in SSFs are associated with loss of income, food security, product quality, product nutritional value and safety to customers and loss of market potential among others. Reasons for specific quality losses are mishandling of fish onboard boats or during sale, bad or poor packaging, overexposure to sunlight, lack of adequate freezing and storage facilities. Other such losses occur during the drying of fish in public places that are not necessarily hygienic, as often such drying is completed right in front of fisher homes (Kumolu-Johnson and Ndimele, 2011; Akande and Diei-Ouadi, 2010; Wibowo et al., 2017; Kruijssen et al., 2020).

The main reasons for the quality deterioration of fresh fish and why it is discarded is the lack of ice, time and high temperature exposure of fish before and after landing, as well as an insufficient processing capacity (Akande and Diei-Ouadi, 2010). Whereas market force losses are caused by an inaccessibility to markets because of the remoteness of many fishing villages; fishers also commonly lack transport including money for petrol to make these trips to markets. Other losses are caused by the oversupply of fish during peak season as well as discriminatory power dynamics in transactional relations to name but a few. Akande and Diei-Ouadi (2010) speak of examples where fish buyers will delay the purchase of fish to the point where the fisher has become so desperate to sell the consignment of fish for any price. These dynamics highlight the vulnerable position of small-scale fishers and suggest the need to examine ways of improving access to a variety of interested buyers and enhance the quality of the product in order to demand higher prices for their catch.

Although small-scale fishers incur losses as described above, they have been found to employ various coping strategies to try to control or minimize these losses (Cheke and Ward, 1998; Akande and Diei-Ouadi, 2010; Wibowo et al., 2017). Many increase their fishing effort as a strategy for coping with market losses (Cunningham, 1994; Petrik and Raemaekers, 2018; Kruijssen et al., 2020). Having a larger number of fish to sell may recompense financial loss, however, this increased effort places increased pressure on resources. Fishing communities may also turn to the sale of by-catch of their fishery, use different gear types, or try to engage in other livelihood-sustaining work. Few fishers can rely on savings to counteract the losses they encounter.

Essentially all SSFs value chain losses are intimately linked to the traditional post-harvest practices of fisher communities which in turn is influenced by their socio-economic context and capacity to improve or harness more modern post-harvest measures (Akande and Diei-Ouadi, 2010; Kumolu-Johnson and Ndimele, 2011; Kruijssen et al., 2020). The assumption made in the literature is that the maintenance of the quality of the fish, alongside the accessibility to potential markets would contribute to increasing the value of the fish and consequently the income of the fisher. This may well be the case, but the purchasing power of the fishery market demands exploration in order to ascertain whether this assumption is in fact correct. In addition, an understanding of the injustices that prevail in traded seafood value chains can help identify the weaknesses in the post-harvest system and suggest strategies to overcome these. Such a strategy may well be a strengthened motivation to form fisher cooperatives to promote improved financial returns for fishers and market participants that are predominantly characterised by financial motivations, as well as skills and limited information to negotiate fair prices with buyers (Petrik and Raemaekers, 2018; Kruijssen et al., 2020).

2.4. Understanding the Value Chain

2.4.1. Trade and marketing of SSF products

A critical aspect of value chains is understanding that customer choices are not always price driven; customers may be willing to pay higher prices for a value-added product (Bjørndal et al., 2014, 2015). Contrary to this, supply chains assume that most customers want the same product for the least amount of money, thus creating commodity markets with essentially little to no value being added to the product (Bair, 2009; Camerinelli, 2016). Value chains integrate three interacting levels within a network, namely actors, supports and influences (Pomeroy and Andrew, 2011). The development of this network would be most favourable in an environment that is economically and politically stable, enables least costs for business operations and in turn fuels greater innovation and creativity (CYE Consult, 2009).

Again, it is critical to remember that any value chain operates within an environment and so is affected by the broader social, economic and environmental context within which influencing policies and regulations, institutional elements and facilitating services exist (Allison et al., 2012).
Alongside the three levels of value chains, these chains operate within three categories; namely end-markets, the business enabling environment and supporting markets (De Silva, 2011). These categories need to be holistically assessed if the overall benefits of the fisheries value chain are to be

improved. The end-market is where the customer, or the end-user of the product is located; the individual or organisation for whom the product or service is intended for. It is critical to understand the end-user to inform the producers of what is realistically achievable in the way of market access or value-addition (Trienekens and Omta, 2002).

Small-scale fishers often forfeit considerable potential income due to poor post-harvest activities that detract from value-addition potential of the fish as well as inequitable returns from marketing transactions (Wentink, et al., 2014). Wentink et al. (2014) argues that small-scale fishers are often subject to 'arm's length' relations with end-users – generally because of inequitable transactions with middlemen (locally known as *"langanas"*), marginal revenue from informal community chains and market exclusion due to limited information on market requirements. Furthermore, abuse of power by the *"langanas"*, small quotas and legal constraints all contribute to a marginalisation or exclusion of small-scale fishers from the marketplace (Isaacs and Hara, 2015).

It is widely accepted that small-scale fishers receive the least economic benefits relative to other value chain actors (Jacinto and Pomeroy, 2011; Bjørndal et al., 2014, 2015; Wamukota et al., 2014; Bailey et al., 2016; Kimani et al., 2020). However, little basic data is available to confirm such statements and assess the distribution of benefits from trade in SSFs (Wamukota, et al., 2014; Barclay et al., 2017). The majority of the economic benefits from distribution flow instead to processors and retail markets (Wentink, 2017). Connecting small-scale fishers directly to more of their customers is advocated by Wentink (2017) as a possible means of upgrading SSFs through enabling fishers to set prices for their fish and exclude the "middleman" who adds extra costs as an additional node to the value chain. However, to better comprehend the upgrading process, it is necessary to assess the dynamics of the value chain in which small-scale fishers are embedded. Competing with specialised traders, small-scale fishers often lack the power to control market outlets and the prices they receive (Allison et al., 2012).

High levels of power asymmetry result when small suppliers are dependent upon larger buyers – therefore, rendering small-scale fishers as captive in the value chain with very little capability to renegotiate their position to one that is more favourable (Gereffi et al., 2005). The weak position of fishers in the value chain could possibly be attributed to a poor knowledge of the market value of fishery products (Ram et al., 2014; Purcell et al., 2016). Increased transparency and better access to information in the value chain, may well provide the means upon which fishers can bargain for higher prices from buyers (Jacinto and Pomeroy, 2011). However, improved transparency in the value chain does not immediately translate into an increased income for fishers. Instead the acquisition of this

knowledge and its subsequent implementation through an organised collective that possesses the requisite power to engage in the market, can be the catalyst to realising improved incomes (Wentink et al., 2017).

The persistence of unfair relations between fishers and their traders demands attention to be drawn to an assessment of potential means to improve the return received by fishers as well as the sustainability of the fisheries resource (Jacinto and Pomeroy, 2011). Essentially access opportunity has failed to translate into meaningful well-being promotion for many SSF communities. Upgrading of SSFs within the sector's value chains is necessary if legal access to resources is to translate into entrepreneurial opportunity. Genuine engagement in opportunities that seek to utilise grassroot mechanisms for local development has the potential to facilitate this upgrading process within the fisheries value chain. For this reason, it is important to understand the existing value chain dynamics of the fishery system under consideration before suggesting new approaches that may in fact be inappropriate to the context.

2.4.2. Local organisation and external intervention

Upgrading in SSF value chains is defined as capturing more value in the chain by balancing a range of economic, environmental, social benefits and risks (Humphrey and Schmitz, 2000). The support required to upgrade fishers in the value chain is commonly thought to be that of external intervention by an 'extra-transactional' actor and/or the sufficient collective approaches of fishers themselves. Petrik and Raemaekers (2018) argue that such an external actor would have to be independent of the social relations that structure the value chains (Mitchell and Coles, 2011; Bailey et al., 2016a, 2016b) – examples of which are the state and civil society groups. However, little attention has been given to define the forms of external intervention or collective forms of action necessary for fishers to renegotiate their market relationships (Jentoft and Davis, 1993; Markelova et al., 2009). External intervention is proposed to achieve the organisation of collective forms of action and upgrading by assisting small-holder groups, such as small-scale fishers (Markelova et al., 2009). Markelova et al. (2009) acknowledge the rarity and significance of self-organisation of small holder upgrading or collective forms of action though the authors contend that there needs to be a novel reconfiguration of power relations if upgrading is to be realised. Jacinto and Pomeroy (2011) subsequently argue that the development of fisher cooperatives can improve the financial returns to small-scale fishers by responding from a more empowered position to upgrade value chain governance in their fisheries sector.

At a minimum, SSFs should be organised and empowered to influence value chains in order to enable all those participating in the chain, especially those most vulnerable to exploitation, to derive a fair and meaningful livelihood, and so be incentivised to avoid overexploitation of stocks (FAO, 2018). However, many fisheries at all scales suffer from a lack of transparency. Transparency in this context refers to the disclosure of information among actors of different parts of the value chain, examples of which are the production practices and prices (Petrik and Raemaekers, 2018). This means that little is known of the participation of different actors in the value chain, their acquisition from the chain and the flow of benefits and drawbacks between different actors in these linkages (Petrik and Raemaekers, 2018). In reality, many traders and processors possess exclusive market information (Jacinto and Pomeroy, 2011) and as a result, exploitative social relations are created with those more vulnerable actors in the value chain to further the returns of those more empowered actors (Croner et al., 2010; Ferrol-Schulte et al., 2014; Nurdin and Grydehøj, 2014; Bailey et al., 2016a, 2016b).

2.5. Focusing in on South African SSFs and its associated market

The fish sold by small-scale fishers in South Africa is mostly sold at a reduced price compared with the same fish sold by commercial fisheries, and this for a variety of reasons. Fish provides a cheap source of protein for local communities and is affordable, contributing to the overall nutrition of citizens within surrounding settlements (Béné et al., 2007). In this context, it becomes necessary to review the unique position that small-scale fishers hold within the South African fishing industry.

The seafood market within South Africa is predominantly determined by market prices, species availability and ease of accessibility to customers (WFF, 2011). However, consumer awareness continues to grow with eco-labels like the World Wide Fund for Nature’s South African Sustainable Seafood Initiative (SASSI) and the Marine Stewardship Council (MSC) (WFF, 2011). These eco-labels, though commendable for their contribution to species preservation, fail to account for social sustainability considerations (Gutierrez and Thornton, 2014). These labels serve to improve customer awareness of the endangered marine species that flow through the market. However, issues of resource ecology, the fish production process and value chain analysis are not included in this system (Gutierrez and Thornton, 2014). Most labels do not paint a picture of the whole product life cycle, and so fail to provide an accurate picture of sustainability in its broadest sense (Williams, 2015). This assumption renders the proposed ‘conclusive’ environmental assessment of the product as a mere speculation (Golden et al., 2010). An example of the above would be the neglect of such labels to

promote local seafood options or to account for the distance that imported seafood travels (Food and Water Watch, 2010) that instead fair trade may be able to provide for.

The marketplace acts as a barrier between consumers and the food they eat – removing the responsibility of consumers to source and prepare their food sustainably by obscuring the choices that inevitably take place behind the scenes (Williams, 2015). Though customers possess a large degree of freedom to choose what they will consume, it is ultimately the market that dominates the control of where customer food comes from. It is in this context, that marketers could utilise this responsibility to move towards positive sustainable change through meaningful resource sourcing, usage, and management, addressing social issues through fair pay for primary producers and engaging with consumers to build awareness of all the dimensions of sustainability (Andriof and Mcintosh, 2001; Forum for the Future, 2011).
An initial step for marketers to move towards sustainability in their practices would be to source local and seasonal seafood (Dalmeny and Reynolds, 2007) - serving to bolster local food economies (Blay-Palmer, 2013). Sustainability within seafood markets would require a holistic consideration of the complex network of linkages associated to the product, i.e., suppliers, customers and consumers in order to promote the environmental, alongside the social capital invested into the product (Andriof and Mcintosh, 2001; Forum for the Future, 2011). This is where it becomes critical to view the marketers as a complex network embedded within fisher value chains (Jentoft and Chuenpagdee, 2009).

Trading between small-scale fishers and marketers occurs within a broader context, influenced by a mixture of complex factors such as the market, personal preference, location, contacts, price and access (Jentoft and Chuenpagdee, 2009). Directly connecting small-scale fishers to seafood marketers can be a possible means of reducing inequality in the existing value chain and enhancing fisher livelihoods through income maximisation. Competitive industry marketers like restaurants are most significantly influenced by guaranteed availability, proximity, competitive quality and prices, and reliable communication – a lot of which small-scale fishers struggle to deliver (Williams, 2015). Based on research collected by Williams (2015), it was found that there exists an overall interest and willingness of restaurants to source fish from local SSFs, but that current market demands like the requirement of product consistency in supply and reduction of external costs, ultimately hinder this willingness from being realised (Katsigris and Thomas, 2006). Exploring the barriers experienced by restaurants to source their seafood directly from small-scale fishers, Williams (2015) found that all challenges raised reinforce a lack of guaranteed and consistent availability offered by small-scale

fishers. Other prominent barriers were a lack of a regular market or meeting place, insufficient fisher communication and time constraints. Therefore, additional incentives for marketers like restaurants or outlets to source directly from small-scale fishers needs to be fostered alongside creating an awareness of the associated benefits and implications of various sourcing strategies (Welter, 2012).

2.6. Governance of South African SSFs

Historic, political, social and economic challenges have subjected South Africa's small-scale fishers to adverse marginalisation for many years (Branch et al., 2002). The historic management approach to this fisheries sector has been dominated by a top-down and eco-centric approach (Branch et al., 2002b; Harris et al., 2002; Raemaekers, 2009; Sunde and Raemaekers, 2010). Several black and coloured South African fishing communities were dispossessed of their land adjacent to the coast due to the Native Land Act of 1913 and their right to resources became increasingly restricted during Apartheid. During the Apartheid era, fishing access was granted through a quota system to several white-owned large-scale commercial companies under the Sea Fisheries Act - this meant that many *bone fide* small-scale fishers were subsequently criminalised for their fishing activities (Daniels, 2001; Kleinschmidt et al., 2006). Moreover, increasing economic pressures forced thousands of these traditional fishers, particularly in the Western Cape, to take up employment in the large-scale commercial sector and forfeit their traditional fishing livelihood in return (Glavovic, 2000).

With the advent of democracy in South Africa in 1994, SSFs have been increasingly recognised within the country as the new democratic government was tasked with undoing the many injustices and righting the imbalances that were established in the apartheid and colonial regime. This new era saw considerable legislation being promulgated in the attempt to address the country's unjust past - among these was the Marine Living Resources Act (MLRA) no. 18 of 1998 which became the principle regulatory governing framework for South African fisheries management and remains as such to date. This Act was the first of its kind to recognise subsistence[1] fishers as legitimate fishers that deserved access to marine resources (Branch et al., 2002; 2002b; Isaacs et al., 2000). Although this recognition was certainly a positive step towards the recognition of subsistence fishers, the governing institution

[1] In section 19 of the MLRA, a subsistence fisher is defined as "*a natural person who regularly catches fish for personal consumption or for the consumption of his or her dependents, including one who engages from time to time in the local sale or barter of excess catch, but does not include a person who engages on a substantial scale in the sale of fish on a commercial basis*".

lacked both the experience and capacity needed to effectively manage this diverse fishery along the country's coastline (Glavovic, 2000; Branch et al., 2002; 2002b).

No fishing rights have been allocated to date in the SSF sector since the promulgation of the MLRA in 1998. Thus far, only annual exemptions in the form of annual permits, in terms of section 81 of the MLRA which allows the Minister to exempt fishers from section 18 of the MLRA, have been issued to small-scale fishers. The delay in the rights allocation process has meant that many fishing communities remain financially challenged with effort restrictions. The National Fisheries Authority set up the Subsistence Fisheries Task Group (SFTG) in 1999 to advise on the management of the subsistence sector. The SFTG advised that functioning co-management structures be formed, but this has proved to be a difficult task for the past 15 years.

In the Western Cape, the STFG argued that there were no subsistence fishers, and instead most poor fishers were classified by the STFG as small-scale fishers in terms of the 'small-scale commercial' fishers' definition. This conclusion meant that many poor fishers who in fact met the criteria of subsistence fishers, were further marginalised (Sowman, 2006). With the help and support of NGOs such as Masifundise Development Trust and the Legal Resources Centre (LRC), these traditional small-scale fishers were empowered to approach the Equality Court in 2004. These fishers expressed their frustration at being deprived of their constitutional rights to resources as well as having as they were forced to compete for fishing rights with the industrial fishing sector. This argument was put forward by many fishers after the commercial-fishing rights allocation process was issued for medium-term rights in 2001/2. Their frustration resulted in protest action, awareness raising campaigns and ultimately legal action to claim their rights. In 2007 the Equality Court ruled that the government needed to formulate a new policy that would address the socio-economic needs of traditional fishers and develop a more holistic and participatory approach to managing this fishery sector (Ngqongwa, 2015). Furthermore, the judge ordered that interim relief permits be provided to 1200 identified fishers from the Western Cape and Northern Cape while the policy was being formulated. Since they were issued in 2009, the government has been forced to increase the total number of interim relief permits to 2000 fishers by 2014 because of high numbers of fishers demanding access to the resources. Several thousand fishers await the opportunity to be granted access to harvest resources through the issuing of more interim relief exemptions.

After the Equality Court ruling, a National Task Team was established to develop a rational Small-Scale Fisheries Policy. June 2012 presented a celebratory moment for small-scale fishers across the country

as the first SSFs policy was finally gazetted after its almost decade-long formulation process. The new policy presented a paradigm shift in management approaches to this sector, which was previously dominated by technocratic, science-based and top-down decision-making processes. The SSFs policy promoted an approach to management that advocates a community-orientated and participatory approach (Sowman et al., 2013). This policy also redefined subsistence fishers as 'small-scale'[2] fishers. The new policy was broader in its understanding of subsistence fishers and incorporated all fish workers involved in the pre-harvesting and the post-harvesting phases of the fishing value chain. Although it has been thirteen years since the Equality Court order, small-scale fishers within South Africa still anticipate the benefits they were promised from implementation of the SSFs policy. The interim relief exemptions brought much-needed respite for some fishers. However, many others have experienced social and economic challenges such as heightened fisher conflict over access to resources and significant growth in the organised poaching arena of resources, particularly West Coast Rock Lobster (Ngqongwa, 2015).

The new policy also required the fisheries authority to undertake regular stock assessments to determine the state of harvested resources, to identify the resources that could be allocated to this sector, and to develop holistic management plans. While management of SSF resources adopted conventional fisheries management approaches, the fundamental difference was that the resources would be issued as a "basket" of species and resource users would become part of the decision-making processes that affect their livelihoods (Sowman et al., 2013). Local contexts were acknowledged for their differences and the policy recognised that management approaches needed to be adaptive and tailored to the different contexts. Each fishing community was required to establish a cooperative to hold the right. There was a requirement to establish a local co-management structure that would serve as the means through which government and the community could communicate to co-manage resources. These local structures were also intended to help realise the policy's mandate to promote social equity, justice and collective governance of marine living resources.

2.7. Policy direction regarding marketplace access:

[2] Small-scale fishers as defined by the SSFs Policy, promulgated in 2012, as "*…persons that fish to meet food and basic livelihood needs, or are directly involved in harvesting/processing or marketing of fish, traditionally operate on or near shore fishing grounds, predominantly employ traditional low technology or passive fishing gear, usually undertake single day fishing trips, and are engaged in the sale or barter or are involved in commercial activity*".

The policy recognised that the use of marine living resources to sustain food security, serves to alleviate fisher households from falling deeper into poverty. Where barriers to entry hinder individuals' access to economic or institutional capital and production as well as fair market participation, the policy acknowledged that fishing provides a promising livelihood alternative and 'safety net' for those most poor and marginalized households to obtain basic goods and services. Considering the supply chain generated from SSFs, this sector provides substantial job creation and livelihood opportunities in various stages of the value chain. It is acknowledged within the policy that the critical livelihood support offered by this sector far outweighs the financial returns attained by fishers – most notably in poorer areas where alternative employment and social security programmes are scarce. Moreover, the policy asserted that to develop this sector's economy and address discriminatory market forces prevalent in SSFs requires the state to offer infrastructural development, social support and service provision.

Although promulgation of the SSFs Policy in 2012 promoted principles of redress, sustainability and social justice, promised to provide support to the development of the sector, it has not yet delivered on much of its intentions. Small-scale fishers continue to struggle for equitable market access that does not perpetuate suppression of their earning potential (Petrik and Raemaekers, 2018). Many fishers continue to be forced to pursue a wide range of activities to subsidise their basic needs and that of their households' – most of which involve insecure and low pay labour with few prospects for improvement or alternative opportunities (DAFF, 2012).

The ambitious goals of the new SSFs policy require extensive community empowerment and local capacity development to ensure SSF communities are empowered and sufficiently capacitated to participate in decision-making and the execution of devolved responsibilities (Sowman et al., 2018). Ultimately, the governing context of the South African SSFs sector has a powerful effect on the fairness and equity realised in the sectors' value chains with its potential to empower or suppress the position of small-scale fishers, particularly in the post-harvest phase.

Chapter 3:
The Olifants Estuary and Harder Fishery: Case Study

Chapter 3 provides a brief description of the Olifants Estuary for the reader to contextualise the study area of this research. This chapter begins with an overview of the biophysical and socio-economic significance of the Olifants estuary, as well as the history of the area. Thereafter it describes the river fishers and provides a brief overview of the governing framework of the OEGF. This chapter demonstrates the complexities and linkages of the Olifants estuary as a socio-ecological system, with a particular focus on the post-harvest activities of the OEGF.

3.1. A Biophysical and Socio-economic Overview

Situated approximately 350 kilometres northwest of Cape Town, the Olifants estuary falls within the Benguela Current – one of the most productive large marine systems in the world (Cochrane et al., 2009). This estuary, the twelfth largest estuary in the country, is approximately 36 kilometres in length and is known for its role as a significant nursery and watercourse for fresh and saltwater fish species, as well as a key feeding and nesting site for many bird populations (Turpie, 1995; Turpie et al., 2002). The estuary's unique and highly productive ecosystem is influenced by its strong tidal and salinity fluctuations (Turpie et al., 2002; Fielding and Bergh, 2007). One of the only four permanently open estuaries on the west coast (Whitfield, 2000), the Olifants has been ranked as the third most important estuary in South Africa - critical for conservation (Turpie et al., 2002). Alongside the estuary's clear conservation importance, is its significant contribution to the livelihoods of the Olifants traditional gillnet fishers who have fished in its waters for over a century (Fielding et al., 2007; Sowman and Sunde, 2010).

3.2. The Fishers and their history

The estuary provides community members with the opportunity to derive food and cash for sending children to school and meeting other basic household needs. However, for the people of Ebenhaeser and Papendorp, the river represents more than just food and a contribution to livelihood. The estuary is integral to the culture, way of life and identity of community members as illustrated in the following quotes from fishers (Sowman, 2017: 28).

"It is the heart of the fishing people.

You feel it in your blood … it's part of who you are.

The river runs like blood in our veins.

Fishing is my life, I mean I cannot do anything else.

For the people of Ebenhaeser and Papendorp, it is the reason for their existence. "

Image 2: Gillnet in the water at the Olifants estuary, near Papendorp. **Photograph:** Wayne Rice, 2016.

The Ebenhaeser community comprises the descendants of families that were evicted from the estuary's upper fertile agricultural land in 1925 to the lower, saline reaches of the estuary in terms of the Land Exchange Act of 1925 (Sowman, 1997). These former community lands were subsequently surveyed for irrigation settlement and designated for 'white-only' farming (Sowman et al., 2001). This relocation forced the community to transition their subsistence activities from farming to fishing where they became largely dependent upon the estuary for food security, income and livelihoods.

These communities target the local fish known as "harders", *Liza richardsonii*, in the estuary using rowing boats and gillnets. This fishery includes incidental catch comprising linefish species such as elf (*Pomatomus saltatrix*), white Steenbras (*Lithognathus lithognathus*), white stumpnose (*Rhabdosargus globiceps*) and silver kob (*Argyrosomus inordorus*) among others (Rice, 2017). A significant portion of

catches are eaten within the household, with more than 50% of household members consuming fish every day (Anchor, 2008). The local fishing communities continue to rely on the harder resource largely for subsistence, though they are known to sell their catches to farmers and marketers in the surrounding towns – particularly in the summer months when the catches are good. These fishers also salt and dry the harders, making a product locally known as 'bokkoms' which is used as a source of food to sustain the community through the winter months when catches are reduced (Hushlak, 2012).

Image 3. The process of making *'bokkoms'*. **Photograph**: Nolene Rice, 2015.

Ebenhaeser history indicates that these communities have been marginalized and are dependent on the estuary's resources as a result of receiving little alternate assistance from government (Hushlak, 2012). They have also been excluded from management decision-making that affect their livelihoods and struggle to secure fair market access and participation (LRC, 2003; Williams, 2013). The Ebenhaeser fishing families are considered poor and characterized by high levels of unemployment (Sowman, 2017), with an average monthly household income of between 378 - 579 Rands (Carvalho et al., 2009). Few community members have formal jobs and thus per capita income is low. Fishing is in most cases, the major or only source of food and income in the community. In 2004, only 33% (n=67) of fishers reported to have members in the household that participate in formal jobs and obtain a regular income (Sowman, 2009). There are around 1200 households in the Ebenhaeser and Papendorp settlements with approximately 120 of these involved in fishing for food or contributing to livelihoods (Williams, 2013). Although there is a core group of fishers who will fish whenever conditions allow, many other fishers seek alternative employment, which generally consists of temporary low paying manual labour, in order to supplement their incomes and meet household needs. Community members not engaged in fishing are otherwise particularly involved in small-scale agriculture, ad-hoc

work on commercial farms when needed, or gain short-term employment from government public works and poverty alleviation projects (Sowman, 2017). Many residents rely on government social grants to provide for their basic needs since other alternatives are few (Williams, 2013).

3.3. The OEGF and the harder resource

Fishing is generally carried out in the lower 15km's of the estuary, though the river mouth area remains closed to fishing. The Olifants fishers use gillnets that are set and then allowed to drift with the current and which are checked every 1-2 hours. If the catches are good, they are left in place, but if the catches are poor, nets will be lifted and re-set at a different location (Williams, 2013). Since 2003, fishers were permitted to use nets that are 45m in length and with mesh sizes ranging from 48 to 64mm.
Along the West Coast, growing dependency on the harder resource by fishing communities has led to an over-exploitation of the resource and recruitment over-fishing where substantial quantities of fish have been removed from the population before they reach fertility and reproduce (DAFF, 2016). Partially estuary-dependent fish like the harders of the Olifants have estuarine juvenile populations that have most recently been estimated at 60% of their pristine population (DAFF, 2016). It must be acknowledged however, that there has not been a proper stock assessment for this species for several years (DAFF, 2016; Rice, 2017).

Access to the fish resources of the Olifants estuary is controlled through granting of exemption permits that are awarded on an annual basis by the relevant fisheries authority,Department of Agriculture, Forestry and Fishing (DAFF) now Department of Environment, Forestry and Fishing (DEFF). While the implementation of the new SSFs policy develops, interim relief (IR) permits have been allocated to small-scale fishers in coastal fishing villages throughout South Africa on an annual basis to address their immediate socio-economic needs. Approximately 30 fishers from Ebenhaeser and Papendorp have obtained IR permits to fish at sea. Although there are several problems in terms of exercising these interim rights (e.g. difficulties to find transport to get to the launching site at the fishing village); this fishery is far more lucrative and thus these 30 fishers tend to fish at sea in preference to the estuary (Sowman, 2017). The permitting system currently allows for 45 legal permit holders to fish in the Olifants estuary, although each fisher may take a second fisher on the boat to fish – essentially allowing 90 fishers on the water. In practice there are far fewer fishers on the estuary on a regular basis and the numbers continue to decline as catches become unreliable and more fishers turn to

fishing at sea. However, when fishing is good in the estuary, marine fishers will also fish in the estuary and this causes tensions among river and sea fishers (Sowman, 2017).

Large variabilities exist in the volumes of harders caught by fishers on fishing days and with the change of seasons as shown in the catch data extrapolated from records kept during the period July 2004 to December 2006 (Carvalho et al., 2009). Carvalho et al. (2009) found that even those fishers that would fish on the river 6 days per week during the summer months, were only 0.4 points over the generally accepted poverty index of 25 US dollars per month. Though on average the authors found that fishers caught about 10.10kg of fish per fisher day, working out to approximately 60 fish per day. Lamberth et al. (1997) found that the Olifants Estuary annual tonnage of Southern Mullet comprised 1-2% of the national catch by the gillnet and inshore beach-seine fisheries. The Olifants harder fishery was shown to generate around 212 000 and 318 000 Rands per annum, working out to a mean monthly income per fisher of 378 to 570 Rands, with a higher monthly fisher income of 249 to 1062 Rands in the summer months compared to the winter months (Carvalho et al., 2009).

3.4. Management of the OEGF

Although there have been various community and government monitoring programmes in place over the past 25 years (Sowman, 2003, 2009; Soutschka, 2014), monitoring of catches in the estuary has almost completely ceased. Catches of harders in the Olifants estuary are not routinely reported, and there is currently no form of catch monitoring though previously there was a community-based monitoring system (Sowman, 2009; Soustchka, 2014; Rice et al., 2017) as well as government monitoring, although the results of government monitoring are not available. Concerns have been raised over the years regarding juvenile-capture, as well as concerns over the population status of certain bycatch species in the Olifants estuary (Rice et al., 2017). These concerns have led to several attempts by fisheries scientists and conservationists to close the gillnet fishery in order to preserve the ecological integrity of the line-fish stocks that enter the Olifants river (Hutchings and Lamberth, 2002a; Purchase and Hutchings, 2008). However, with the support of researchers and non-governmental organisations, the fishers challenged the proposed estuary closure. This led to a three year research and negotiation process that resulted in an acknowledgement by government and other stakeholders of the cultural and socio-economic rights of the Ebenhaeser communities and an agreement that the fishers would continue fishing in the estuary but an area at the mouth would be set aside for conservation (Sowman, 2017).

The Ebenhaeser fishing communities have faced an array of challenges since the onset of the 1920s including forced removals, government-imposed permit systems and restricted fishing areas (Sowman and Sunde, 2010; Sowman et al., 2011). Given the high levels of food insecurity and unemployment of the fishing communities of Ebenhaeser, the management of the estuary needs to acknowledge the complexity of this socio-ecological system in order to support the communities' livelihoods and wellbeing, as well as preserve the ecological status of the estuary. Fishers with support from their social partners continue to fight for the recognition of customary and livelihood rights connected to fishing in the Olifants estuary and there remains a call for greater community participation in planning and management of the estuary and its fishery (Sowman, 2009, 2017; Johnson et al., 2013). Proposals for the implementation of a community-based monitoring programme and an adaptive co-management approach whereby legitimate fisheries regulations and effort controls are developed, have been supported by the fishers, the local conservation agency and other estuary stakeholders (Sowman, 2017). Declaration of a community conservation area at the mouth of the Olifants estuary has also been broadly supported (Sowman, 2017).

While much has been written about the historical, social, environmental and ecological aspects of the OEGF, not much is known about the post-harvest activities of the Olifants fishers and the influence these activities have upon fishers' subsequent market relations. This dissertation seeks to address the gap in understanding of the OEGF by exploring the post-harvest activities of the Olifants small-scale fishers.

Chapter 4: Methodology

This chapter covers the research design and the methods employed to explore the post-harvest activities of the Olifants estuary SSF and provide recommendations for beneficiation, considering the markets that exist for the harder fishery – the nature of products these markets desire and their purchasing power. This research made use of both qualitative and quantitative methods.

4.1. Research Design

This project was first conceptualised after the researcher went on an exploratory visit to Ebenhaeser and Papendorp in April 2019 with a research group from UCT who had been working with the community on several fishery related projects over the past several years. The purpose of this trip was to gain a better understanding of the challenges faced by the fishing community in securing a sustainable livelihood and in consultation with the fishers, to formulate a project that would be of relevance and benefit to them. The challenges fishers experienced with the processing, marketing and sale of their fish emerged as an issue requiring investigation. The researcher presented her ideas about how she would conduct this study at a second meeting in September 2019, where she obtained prior informed consent and support for the project from the fishing community.

Ethical Clearance was obtained from the University of Cape Town Faculty of Science Research Ethics Committee on the 28th of October 2019 for this research to commence.

The fieldwork component of this research can be divided into two parts. Firstly, interviews were conducted with fishers within their respective communities, and thereafter, interviews were held with existing and potential marketers of the harder fishery. The first half of the fieldwork was initiated with meetings in both fishing communities namely, Olifantsdrif and Papendorp on the 5th of November to explain to the fishers that interviews would be conducted during that week, as well as to meet with community assistants who would be assisting with the interviews. Due to long standing relationships between groups of researchers at UCT and the fishing community, conducting interviews was relatively straightforward once the project purpose and design had been workshopped with the community. The purpose of the interviews was to gain a broad perspective on how the fishers operated at a community and individual level. Questions to fishers followed three major themes, i.e., the fisher's personal fishing experience and dependence upon the harder resource; second, fisher's

post-harvest activities including their market access and relations; third, open-ended questions regarding their views on means of improving their position in the fishery value chain.

The three fieldwork assistants, one community member from Olifantsdrif and two from Papendorp, were contracted to assist the researcher in conducting the fisher interviews. This assistance consisted of accompanying the researcher to each fisher household and introducing the researcher to the community member and ensuring that the fisher being interviewed understood the purpose of the research and that his input would be anonymous. The association with these respected community members ensured that the researcher was secure and trusted in walking around the communities. These fieldwork assistants were remunerated for their input to the research process.

A total of 29 fishers were interviewed during this fieldwork trip. Fisher interviewees ranged from the age of 18 to 65; with most fishers about 40 years of age. The 29 interviewed fishers were chosen to be interviewed since the fieldwork assistants knew the fishers to currently fish, or have fished, for an income on the Olifants river and so understand the harder market to some degree. Another deciding factor for why a fisher was chosen to be interviewed was based on the fisher's availability and willingness to engage during the week of fieldwork. These 29 fishers comprised of 10 individuals from Papendorp and 19 individuals from Olifantsdrif.

Ten fisher logbooks were created for the purpose of cross-referencing information provided by the fishers during the interviews regarding the prices they received for their catches, their post-harvest activities and their subsequent market relations and endeavours. The idea of the logbooks was introduced at the community meetings held on the 5th of November and fishers who would be willing and interested to keep a logbook a period of six months was confirmed. These fishers were asked to record all aspects of their fishing trip and post-harvest activities in these logbooks for the period 8 November 2019 to the end of April 2020. Fishers were asked to document the details of a fishing trip and the post-harvest and market activities conducted thereafter in these logbooks. Two of the three fieldwork community assistants provided oversight to ensure that the logbooks were correctly filled in after each fishing trip. Both assistants were women and were selected based upon their knowledge about the fishery, their relationships with the fishers and their eagerness to take on the work. This work also provided an opportunity to empower these women to play an active role in the fishery where men are otherwise dominant. These fieldwork assistants were remunerated by the University for their fieldwork support.

There was a total of 168 logbook entry submissions from Olifantsdrif fishers and 30 logbook entry submissions from Papendorp. The considerable difference between the two location's number of logbook submissions was the result of several factors. These include the difference in number of fishers sharing their catch information with the monitor at each location - there were only three fishers in Papendorp and seven in Olifantsdrif who recorded data for the logbooks. Another major factor contributing to the difference in number of logbook submissions was that the community assistant in Papendorp stopped recording information mid-way March due to personal reasons. Finally, there was a greater frequency of recordings each month in the logbooks per fisher in Olifantsdrif compared with Papendorp. This may have either been because the fishers in Olifantsdrif fish more regularly than those in Papendorp, or more likely because the community assistants filled out the logbook forms with variable consistency.

The second part of this research was conducted during the period 16 -18th December 2019 where regular buyers and potential marketers were approached and interviewed. This part of the research allowed for insight to be gained into the perceptions of marketers regarding the fishery and the relationships between fishers and the buyers. The marketers were interviewed to find out more about their experiences of purchasing Olifants river fish to ascertain if they were active buyers, and their potential interest (or disinterest) in this product. The marketers were also questioned about their perceptions of the pricing structure for the Olifants harders and their concerns and suggestions for improving the marketing of this fish.

A total of 12 marketers were interviewed including four owners of restaurants, four potential buyers from convenience stores, two owners of seafood shops, one farmer (see Image 5) and one non-profit organisation (NPO), ABALOBI[3] that is in Westlake, Cape Town. Of the 12 marketers interviewed, only five were currently active buyers of fish from the community. Of the seven non-purchasers, only two marketers were interested in purchasing Olifants harders.

[3] ABALOBI is a registered NPO that has a mobile app suite and programme aimed at social justice and poverty alleviation in South African SSFs value chains. The NPO promotes the sale of traceable, storied seafood by empowered small-scale fishers in a manner that is both ecologically sustainable and socially fair.

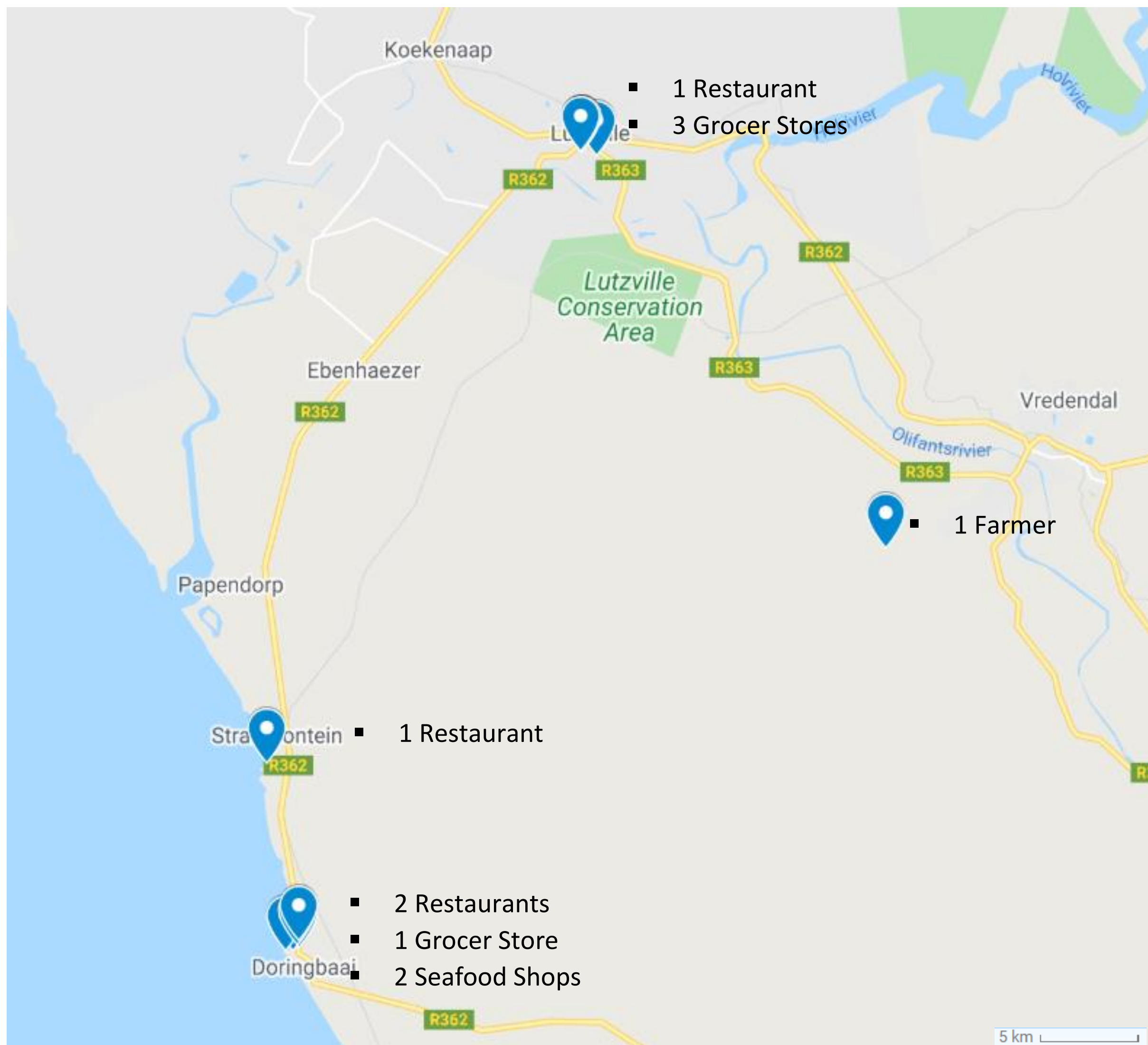


Image 4. Map of the surrounding 11 marketers interviewed in this study. Note that the 12th marketer, ABALOBI NPO, is not represented on this map.

A workshop to feedback the results of the research was planned to be held at the end of March 2020. However, this workshop was postponed due to the COVID-19 outbreak resulting in a nationwide lockdown. The intention is to hold a feedback workshop once restrictions have been lifted to allow for safe group interaction and engagement.

4.2. Research Methods and Data Analysis

A large aspect of this study employs a qualitative research approach to explore how people construct their worldviews, interpret, and ascribe meaning to their experiences. Qualitative research generally requires the collection of data in the participant setting (Creswell, 2009). Analysing qualitative data

involves building particulars into greater themes from which the researcher can develop an understanding (Creswell, 2009). The questions asked in both the fisher and marketer interviews were largely open ended and sought to explore interviewees experiences, perceptions and concerns of the Olifants harder fishing value chain.

Quantitative analysis using descriptive statistics was undertaken to compare prices given by fishers for their catches sold within the community (i.e. sales with buyers that live within the fisher's community) to prices obtained when sold outside of the community (i.e., sales with buyers that do not live within the fisher's community), as well as for fresh harders compared with bokkom (i.e., whole, salted and dried harder) products. These same comparisons were made for the desired prices offered by the fishers. Not only were the prices analysed, but so too were the post-harvest activities of the fishers. Through a process of triangulation, the answers given by fishers in the interview process, were also compared with that of the logbook submissions.

The applied research undertaken in this study seeks to expand upon the existing understanding of the post-harvest activities of the Olifants small-scale fishers and their market relations. Responses received from interviewees in this research were analysed according to key themes that related to the objectives of this research.

This research makes use of a mixed methods approach for data collection including participant observation, semi-structured interviews (both formal and informal), recording of daily fishing activities using logbooks, and group discussions to satisfy the aim of this study. The methods employed in the study are discussed below.

a) Participant Observation

Participant observation is the act of describing and recording experiences in social settings (Gans, 1999). Participant observation was conducted in the beginning stages of this research to aid in clarifying the research objectives that would be explored. The limitations associated with this method of data collection is the potential for research intrusiveness and privacy of information (Creswell, 2009). Despite these limitations, this study made use of participant observation in its formative stages to develop an overview of the current challenges that face the Olifants estuary community in accessing a marketplace for their fishery, to establish relationships with participants, to experience the interactions between community members, to pinpoint key participants to engage with at the interview stage of the research and to formulate potential follow-up questions.

b) Semi-Structured Interviews

The most important means of data collection in this research were the semi-structured interviews held with 29 fishers and 12 marketers. All interviewees were selected at random based upon their availability and willingness to engage during the fieldwork component of this research. These interviews allowed for the use of core open-ended questions, whilst remaining flexible and dynamic in structure. This flexibility intentionally provides the opportunity for unforeseen ideas and themes to be generated by the participant rather than the researcher (Qu and Dumay, 2011). The semi-structured interviews were used to discuss individual views and experiences of the Olifants SSF and the marketplace, to explore the fishers' perceived strengths and the limitations of their current post-harvest strategies and to engage in debate around how to improve the position of the fishers' in their associated harder value chain. Interviews with fishers were conducted at the fisher's home, whilst interviews with the marketers were conducted at their establishment. No external parties answered any of the interview questions other than the fisher or marketer at whom the interview was directed. All interviews were conducted in the Afrikaans language as this was the home language of the fishing communities as well as the marketers. A translator was used in this component of the research to ensure any language barriers were overcome. The interview process with fishers and marketers varied considerably in duration among participants, but generally lasted about thirty to forty minutes on average.

A weakness associated with semi-structured interviews is the potential for bias in the choice of interviewees (Creswell, 2009) – however, this bias was accounted for in that the only condition for interviewees was to ensure that they were river fishers who lived in the vicinity of the estuary and that a marketer was available and open to being interviewed. The researcher recorded and wrote notes during the interviews, which were later transcribed.

c) Keeping Logbooks

The submission of logbook entries for a period of six months allowed for direct records of fisher post-harvest activities and prices obtained. The requirements of completing these logbook entries are that the recorder has an appropriate level of literacy and has indicated support to participate in the research. Though this is a challenging requirement in the context of Olifants, the validation these records provide for the fisher interviews, is critical. Due to the greater literacy skills of the community assistants, these assistants recorded the logbook information on behalf of the fishers in most instances

as they returned from their fishing activities. The assistants also followed up with fishers on the details of any sales made and provided oversight of the fishers' post-harvest activities by observing fishers' actions, where possible, to ensure that information entered in the logbooks was correct.

d) Group Discussions

An introductory group discussion was held in both of the meetings that took place on the 5th of November in Olifantsdrif and Papendorp. These discussions were held to discuss with the fishers, the project's purpose and design before any interviews were conducted. Unfortunately, the feedback group discussion of this research could not be conducted before the submission of this thesis. However, it remains the intention of the researcher to facilitate a feedback workshop to discuss the findings and recommendations made and add the fishers' insights and ideas to the list of recommendations. This will be an opportunity for the researcher and fisher participants to share ideas and strengthen the recommendations emanating from this study.

4.3. Data Analysis

Following the direction of Rossman and Rallis (2003), this research analysed the data through three means. The first was that of immersion, i.e., the repetitive reviewing of the data to develop familiarity with the material and to discover its underlying messages. Following immersion, the researcher analysed the data. This analysis stage involves a deconstruction of the field notes into substantive statements and an acknowledgement of the emergent topics. The topics were narrowed down into categorical clusters; the basis of this coding was informed by the objectives of this project. The researcher viewed the process of coding as integral in arranging data into relationships, cross referencing data, and bringing meaning to the project material. These topic clusters or themes gave way to data interpretation, which was the final stage of the thematic analysis process. This final stage of the data analysis was that of interpretation whereby understandings were derived from participant experiences and perceptions leading to key themes that underpinned the research findings.

4.4. Research Limitations

As is the case with all research, this study faced certain limitations. Since the researcher is not fluent in Afrikaans, the home language of most interviewees, the potential for the misinterpretation of responses during interviews is acknowledged. The issue of the language barrier was addressed using

a translator to aid the researcher in understanding the Afrikaans responses of interviewees where necessary for the interview component of this research. Second, there was a potential for bias and emotive answers to be given by the participants during the semi-structured interviews. The researcher accounted for such subjectivity by interviewing a range of participants to address the possibility of bias. Third, the time constraints of this research restricted the interview participant sample size. However, this study was guided by what Kvale (1994: 164) argued, “The number of subjects necessary depends upon the purpose of a study… interview as many subjects that you find out what you need to know.” This advice proved valuable in the interview process since the researcher noted similar answers and trends emerging after interviewing 29 fishers and 12 marketers.

Chapter 5:
Findings

Part A

Part A of this chapter addresses the findings of this research obtained through interviews conducted with fishers within their respective communities and the data captured in the logbooks distributed in these communities respectively.

5.1. Olifants fishers' dependence on the fisheries resources

Twenty-seven of the fishers interviewed confirmed that they cannot be totally dependent on the fishery for their livelihoods. *"You cannot be solely dependent on the fishery because fish sales do not make enough money; it only offers relief"* (Fisher 1, Olifantsdrif, 7 November 2019). However, there were twenty-three fishers who confirmed that they are in the unfortunate position of being totally dependent on the fishery. The fishers largely dependent on the resource agree that they are forced to ask other members of their household to supplement their financial and food requirements. Crippling poverty continues to grip these communities. On questioning a fisher in Olifantsdrif about the community's dependence on the harder resource for income and food security, the fisher responded, *"Everyone in the community is becoming poorer and struggles to afford basic goods and services."* (Fisher 3, Olifantsdrif, 6 November 2019). This sentiment reflects the current standing of the Olifants small-scale fishing community – where fishers do not make enough money from the sale of their harders to meet their food and household needs. Yet since these fishers are so impoverished, the income they do receive from their catches provide some sort of relief by contributing towards unmet household expenses.

5.2. Post-harvest activities in the Olifants fishery

It is difficult to provide a definite picture regarding how the fish is used once landed since this separation is dependent upon the volume of fish caught, the season the fish was caught in and the needs of the household at the time of capture. However, fishers interviewed provided useful information that allows insight to be gained on how decisions around use of fish and post-harvest decisions are made. Though fishers struggled to estimate the proportion of fish used for different purposes, all fishers confirmed that they separate their catches according to diverse reasons and demands.

The first consideration would be that of separating catches between the two fishers on the boat, i.e., the owner of the boat and the 'bakkiemaat' (i.e., the second fisher on the boat). The separation of catches between the two fishers on the boat is generally a fair and honest practice with the two fishers mainly dividing their catch equally unless other reasonable need or use motivations exist. Thereafter, fish is separated into four categories, those for household consumption, those fish that are of the legal size to be sold, those that will be given away to friends and family members in need, and fourthly, those that will be dried and salted (See Figure 2). This information was extracted from the 10 logbook submissions for the months beginning November 2019 to the end of April 2020. It can be observed from Figure 2 that the most dominant use of fish would be to sell the fish, followed by eating the fish in the household. Yet with the disaggregation of fish uses per catch volume, it can be observed that when catch volumes are less than 100 units of fish, the percentage of fish kept for eating in the household is increased and is subsequently reduced with an increase in the catch volume. Furthermore, the percentage of fish dried is largely increased when catch volumes exceed 500 units.

Catches are always separated primarily according to the size of the fish, into different classes by the fishers; there was agreement among the fishing community of these class definitions. The first class of fish are the largest fish, these are generally also in good condition, though the size remains the deciding factor. Most fishers try to sell this "first class" fish to outsiders from the community who they argue would offer the highest prices. Only three of the 29 fishers interviewed said that they would rather keep the largest harders for their household since they claimed that they do not receive a price worthy of their catch; "*For the good, big fish, people won't pay the right price."* (Fisher 13, Papendorp, 6 November 2019). The next category of fish size is referred to as the "second class" which are of legal size for sale but are smaller in size than the first class. This second class of fish are also sold, but mostly within the community. Fishers say that external buyers are often not interested in the fish if they are of this second smaller class size since they could rather purchase other forms of protein which offer more substance. Then the third category of fish size, are those which are usually too small to be suitable for sale, and are generally kept for household use, fresh but most are made into bokkoms.

All fishers affirmed that they keep on average about 20 fish for their household food supply per catch. According to the fishers interviewed, this fish will last within the household for about two to three days on average before it is consumed. However, as the winter months approach and the fishers start to notice a decline in the frequency of their catches, they will reserve a greater proportion of their catch for their household needs, filling the freezer space available in the home and salting much of

the fish caught. Fishers confirmed that their personal fridges and freezer space is limited, explaining that they are thus forced to sell most of their catches or otherwise turn the fish into bokkoms. This trade-off between selling or keeping the fish for the household is solely determined by the current needs and demands of the household. If the household needs finances to purchase essential goods and services like that of electricity, the fishers will try to sell all their catch to maximise income. However, if the household needs food, then the fishers will withhold the necessary proportion of fish to satisfy the household food demands.

Twenty-six of the interviewed fishers declared that they would sell the best fish that they caught, that is the first and second classes of fish, and rather turn the smaller size fish into bokkoms. Twenty-four of the fishers claimed that to maximise their income, they would need to sell most of their catches outside of the community. However, five of the fishers, stated that they sell their fish for the same price in the community as what they do outside and thus elect to keep all the fish inside the community. Fishers collectively agreed that their reasons for selling fish outside of the community extend beyond simply receiving a better price for the fish, to incorporating a larger customer base that will allow sales to be exhaustive and thus maximise the income fishers can receive from their fishing activities when the fisher's household is in need of finances.
All fish leftover after attempted sales are either kept for the household or salted, and some fishers will endeavour to resell the salted fish as bokkoms at a later stage. Ten of the fishers interviewed expressed that they will try to share some of their catches with non-fisher households and older family members. This extensive sharing of catches among members in need ensures, as far as possible, that there is provision of food for all members of the community. Although the community is less able to pay market-related prices for the fish, it appears that the willingness of fishers to accept reduced prices offered by community members serves to reinforce bonds within the community, contributing to strengthened social cohesion within the community.

Measures of preserving fish catches begins once fish is landed on the boat; water is thrown over the catch, fishers remove their shirts and place them over the catch along with any other available sacks in an effort to keep the fish cool. Since fishers mainly fish during the night, the exposure to sunlight for these catches is significantly reduced. Once the boat comes to land, the fishers will place their boat in a shady area and replace the current water with fresh water to keep the catch as cold as possible. Phone calls are then made to fishers' regular buyers to try to sell their catches – this role is often played by women in the community, specifically the wives and daughters of the fisher. Women in the

Olifants community also play a role in the cleaning of the fish as well as the salting and preparation needed for the bokkom-making process.

5.3. Marketing considerations factored into decisions on fish use

Catch volume is a major determinant of whether sales are kept within the community or are sold to outsiders. If fishers land large volumes of fish and can combine their catches with other fishers to reach around 1000 harders, they will then ask a member of the community who owns a car, to drive the catches to be sold in the surrounding towns. The cost of using a vehicle to sell fish in the surrounding towns is agreed on average at a total of 200 Rands; this cost is then divided by the number of fishers using the vehicle to sell their catches on that trip. All fishers confirmed that there must be a minimum of 500 fish available to make the trip feasible, otherwise fishers are forced to sell their fish within the community and will generally receive the lowest price for these catches. When a large catch (more than 500 fish) has been landed, the fish will be packed into crates and driven to the surrounding towns where it will be sold to buyers from various grocery stores and butcheries with whom fishers have pre-existing relationships. Sometimes fishers will stand on the corners of busy roads to sell their catch to any interested buyers.

If fishers cannot sell all their harders fresh, perhaps because the market is flooded or there is not a car available to drive the catch to town, fishers will then salt and dry the harders and make bokkoms along with all the undersized harders that if not sold within the community, will be kept for household consumption along with leftover fresh harders.

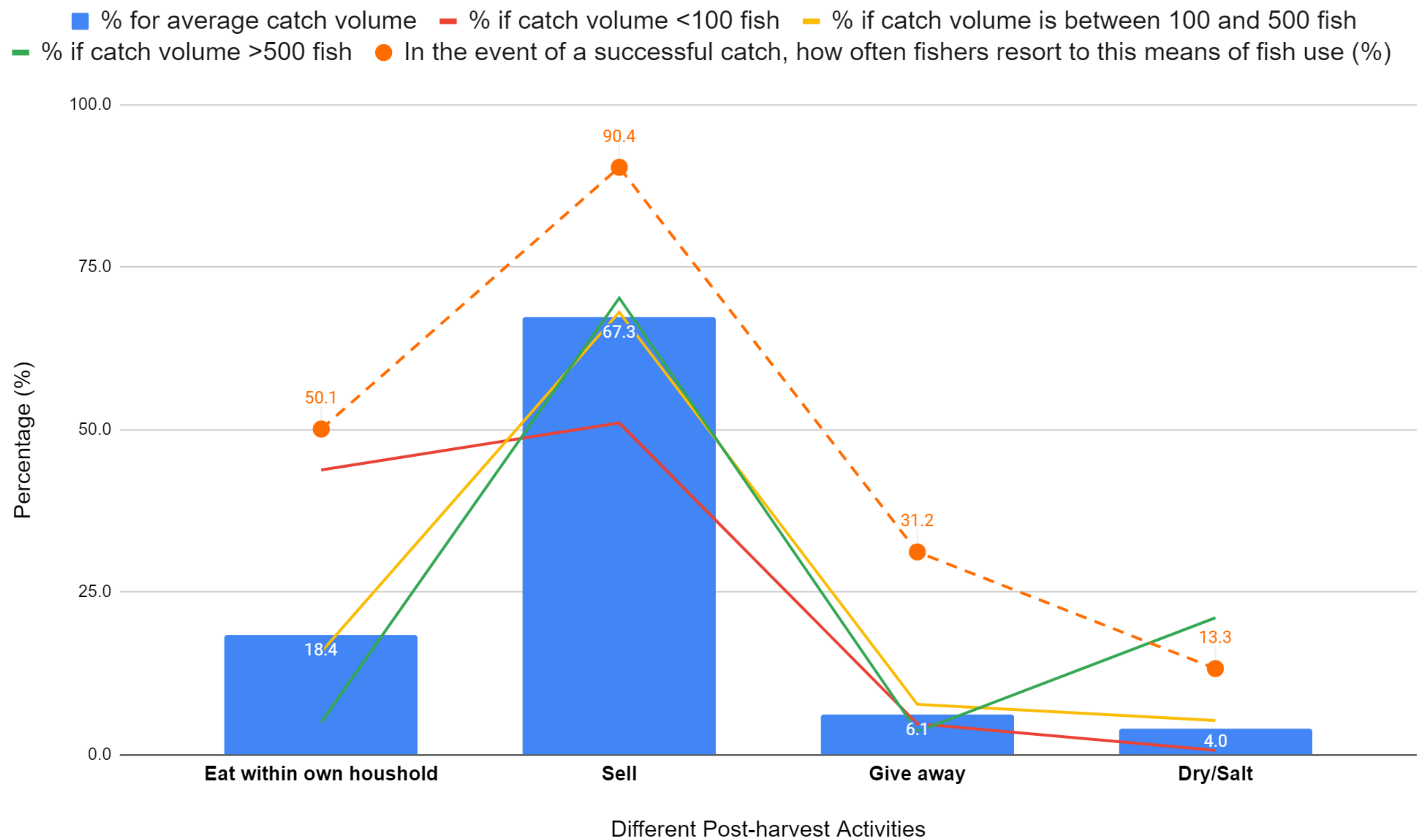


Figure 2. Percentage of harders used for different purposes by Olifants fishers. These different uses are divided into four categories, i.e., fish eaten within own household, fish sold, fish given away to friends and family members in need, and fish dried and salted (i.e., to make bokkoms).

5.4. Olifants fisher market relations

Fishers distinguish the markets they utilise as either 'within the community' or 'outside of the community'. The market within the community consists of fishers either selling and/or giving away fish to interested community members, family and friends. Outside of the community, fishers make use of mainly grocery stores and butcheries in the surrounding towns of Lutzville and Vredendal, farmers nearby and any other interested buyers or holidaymakers driving past as fishers stand on the side of the road.

Though fishers operate under the same traditional fishing system and utilise similar means of preserving and marketing of their fish, there were several notable differences amongst the fishers interviewed in terms of pricing and buyers. These differences were later confirmed by an analysis of logbook submissions (see Figure 4). Regarding buyers, although the fishers may utilise some of the same outlets to market their fish, each fisher has certain buyers with whom they have unique relationships. Another difference is that eight of the ten fishers from Papendorp have buyers that will travel to their village to purchase fish from their households, whereas this did not seem to be the case in Olifantsdrif. Where buyers come into the community to purchase fish directly from fishers, they will ask for a further reduction in price since they claim they have absorbed the travel costs that fishers otherwise would've had to fit themselves.

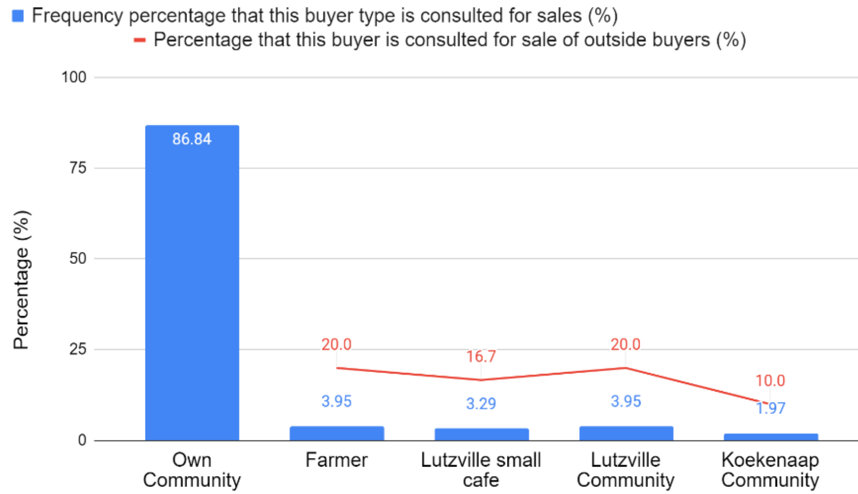
A deeper understanding of the different types of buyers utilized by Olifants fishers as well as the various sale methods deployed by the Olifants fishers can be seen Figure 3. This information was gathered from the 10 logbook submissions for the months beginning November 2019 to the end of April 2020. There was a total of 152 fresh harder sale entry submissions from Olifantsdrif fishers and 28 fresh harder sales entry submissions from Papendorp. The three graphs shown in Figure 3 are separated into a) sales analysis for Olifantsdrif, b) sales analysis for Papendorp and c) the aggregated sales analysis for both communities. There were five major buyer types identified in the logbook submissions, i.e., fishers' own community, farmers, the Lutzville small café (fishers refer to this as the "Chinese shop" as it is owned by Chinese nationals), the Lutzville community, as well as the Koekenaap community. It can be seen in all three of the graphs in Figure 3, that the Olifants fishers most frequently sold their catches within their own community. Olifantsdrif fishers made use of a more diverse array of buyers compared with the Papendorp fishers who sold exclusively to the Lutzville small café during this data capture period. The agreement in terms of the sale of harders by Papendorp fishers to the Lutzville café is not a permanent, but foreseeably ongoing arrangement. It was

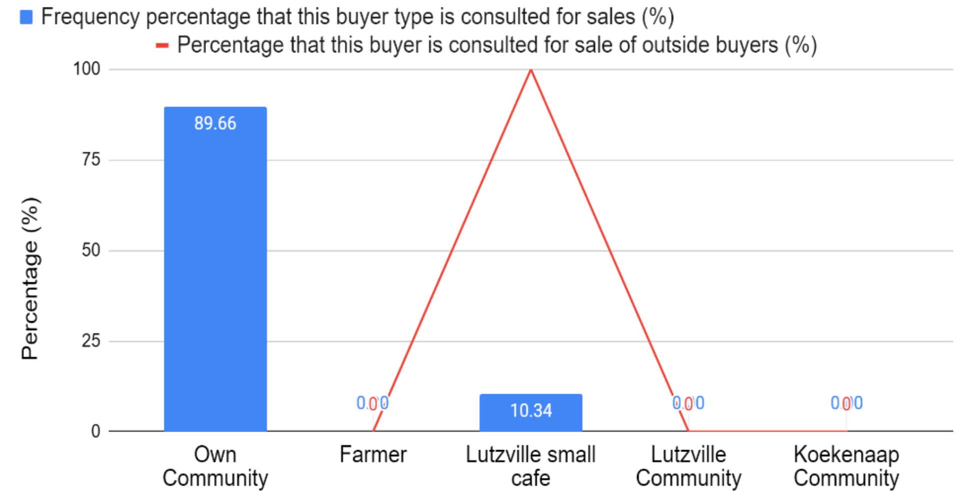
interesting to note that Olifantsdrif fishers sold frequently to external communities directly; this was not picked up upon during fisher interviews.

There were four main methods of sale recorded in the logbook submissions (see Figure 4); these are either that the buyer came into the community to make the purchase, the fisher drove outside of the community to drop off the catches with a targeted buyer (generally previously contacted), the fishers sold the fish 'from their hands' within an external community or the fishers sold the fish 'from their hands' within their own community. The dominant sale method utilised by fishers is to sell 'from their hands' within their own community; the expression of selling 'from their hands' describes the method of selling fish through informal and spontaneous transactions. Papendorp fishers were shown to sell almost 10% of their average catches to buyers who would drive into their community, whereas Olifantsdrif fishers made use of a more diverse array of sale methods.

Considering the relationship between fishers and their buyers, one fisher's statement sums it up well, "*They are the boss"* (Fisher 21, Papendorp, 7 November 2019). Fishers ultimately compromise on the prices they request for their fish due to the desperate need to sell. *"We must fit in with their demands."*, explained a fisher (Fisher 17, Olifantsdrif, 6 November 2019). Although when asked about the status of the relationships fishers have with their buyers, all fishers would initially say that their relationships with their buyers are good, but they would follow this sentence up with a statement saying that they ultimately need to keep their buyers happy in order to make sales. There were only three fishers who explained that they stand firm on the prices they set. These fishers explained that in the situation where buyers are not willing to pay the price determined by the fisher, that the fisher has a choice to make; either to sell the fish for the cheaper price offered by the buyer, or to take the fish and turn it into bokkoms for home consumption or sale at a later stage. These three fishers agreed that they would rather take the fish home than compromise on the price.

Essentially Olifants fishers exist at the vulnerable end of the power dynamic in the value chain. Fisher's poverty circumstances and capacity constraints to travel further and keep their catches fresher for longer, hinder their ability to attain a more empowered position in the value chain. The market forces that exist in the Olifants harder fishery result in the discrimination of the small-scale fishers since power ultimately rests with the buyers.





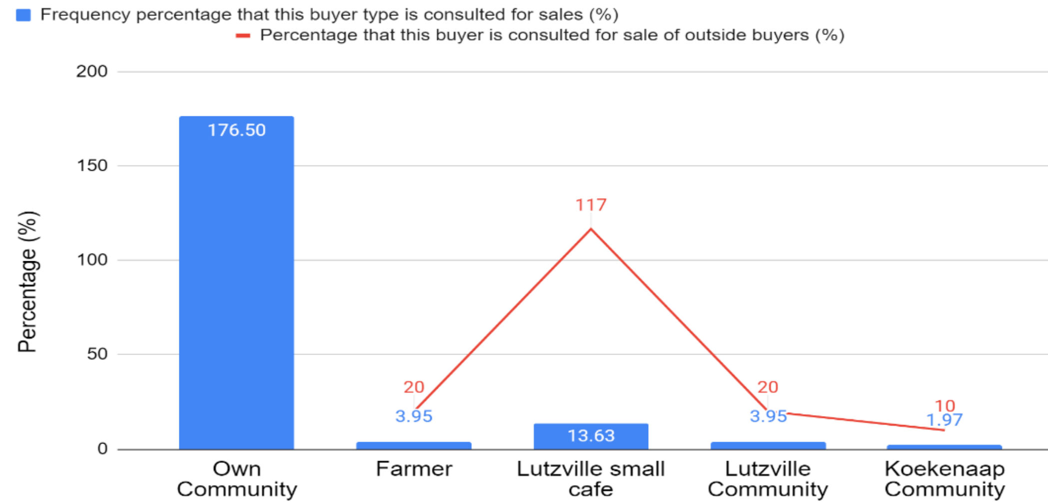


Figure 3. Analysis of the buyers of harders. Note that the blue bars represent the frequency percentage that a specific buyer is consulted for sales, and the red line represents the frequency percentage, of the sales made with buyers outside of the community, that a specific buyer is consulted.

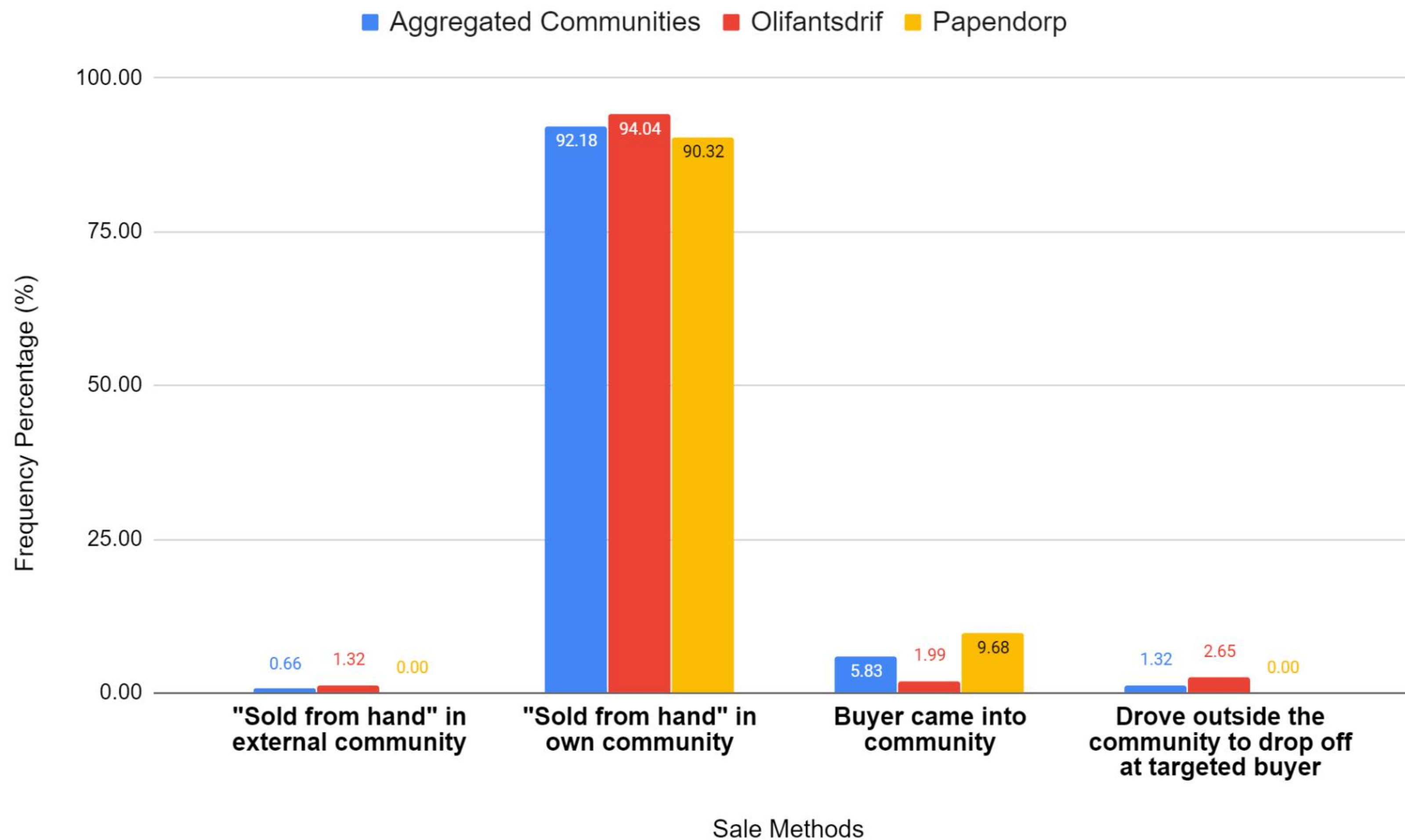


Figure 4. Methods of sale of fish. There are four methods of sale identified in the Olifants harder value chain, i.e., the buyer comes into the community, the fisher drove outside of the community to sell to targeted buyer/s, fish is sold 'from the hand' within an external community, or the fish is sold 'from the hand' within the fisher's own community.

5.5. Price of fish

The small-scale fishers of the Olifants were shown to be price-takers; this is for several reasons. Fishers believe that they are obligated to keep their buyers happy by succumbing to their determined prices. This conviction stems from the insecurity that there exists no buyer willing to pay fishers better prices than those they currently receive. However, some of the fishers interviewed are aware of certain places where they have travelled and have been surprised by the high prices that can be obtained for harders and bokkoms compared with the current prices they receive. Harders are generally sold per kilogram in fishing communities other than Ebenhaeser; assuming harder products are 130 grams per unit on average, the prices these products fetch per unit range from R1.8 in Veldrif to R4.15 in Langebaan and even as high as R6.25 on the ABALOBI Marketplace[4].

Considering the method of catch employed by Olifants river fishers which comprises mainly fishing at night and rowing several kilometres up the river before deploying the nets; an Olifants fishing livelihood is labour-intensive and physically demanding. Since the current market does not engage in price negotiations, these fishers struggle to imagine, what their catches are worth given the effort involved in catching the fish. This challenging context serves to hinder fishers from conceptualising a 'fair' price for their fish. They have become so accustomed to persistent low prices, the powerful influences of marketers assuming the ultimate role of price determination for fisher catches and the repeated disregard of the labour investments of the fisher. One fisher described the experience of conceptualising a fair price for his catches to be much the same "as if an old scab were being torn open afresh" (Fisher 13, Papendorp, 7 November 2019). The realisation of the accepted market discrimination was a painful experience for this fisher.

Table 1. Current and desired price differences between fresh harders and bokkoms, sold within and outside the community.

	Average Current Price per fish (Rands)		Fishers' perception of a Fair Price per fish (Rands)	
	In Community	Outside	In Community	Outside
Fresh Harders	1.35	1.91	3	3
Bokkoms	1.28	1.54	2.22	2.19

[4] The ABALOBI Marketplace connects small-scale fishers with buyers looking for quality fresh fish through the use of information and communication technology services.

From the interviews conducted, information was gathered on the current prices that fishers received for their fresh harder products and their bokkom products. Fishers were then asked to disaggregate their prices with those received when selling within the community and those received outside of the community. Furthermore, fishers were asked to state what they considered to be a 'fair' prices for both their fresh harder products and their bokkom products, considering the effort involved in catching that fish. Again, fishers were asked to differentiate this 'fair' price for fresh harders and for bokkom products within the community as opposed to those received from buyers outside of the community. Many fishers gave ranges of prices for their answers, therefore, to attain the fair price given by each fisher, the highest price given by each fisher is stated, and for the current price given by each fisher, the average price is stated. Bokkoms are sold in bundles of 10 units of fish on average – the price shown for bokkoms in Table 1 and Figure 5 is the price given by fishers per bundle, divided by the number of fish in the bundle to give the price per bokkom fish. Figure 5 displays the data that was extracted from the values given by the 29 fishers during the fisher fieldwork interviews conducted. These product prices are differentiated for prices received within the community compared with prices received outside of the community. In addition, product prices are also separated into current prices obtained by fishers against the "fair" prices the fishers would like to receive. Fishers generally state that the prices they receive for their fish is higher when sold outside of their respective communities; as well as higher when the product is sold fresh instead of dried. As expected, fishers' expectation of a fair price is higher than prices fishers receive.

Figure 6 shows the average prices Olifants fishers received for the sale of fresh harders over the period the logbooks were kept in Olifantsdrif and Papendorp. There is no data given for the month of April in Papendorp, and according to the records fish was only sold outside of the Papendorp community. Figure 6 displays how Olifantsdrif fishers received higher prices on average for their fish by comparison to Papendorp fishers, both within the community and outside of the community in March. There does not appear to be much difference between the prices received over the different months for both communities. Selling fresh harders outside of the community for Olifantsdrif fishers does appear to reach much higher prices than those received within the community. For Papendorp, there appeared to be no distinct increase of prices received for fresh harders outside of the community compared with those received within. The fishers compete against one another through their differences in pricing since they struggle to agree on a set price (One sample t-test, $df = 55$, $p < 0.001$). One interviewee from Olifantsdrif argued that because the fishers differ on prices asked, they cheapen the value of the fish since buyers will favour fishers with the lowest prices and thus the fishers hinder themselves from ever achieving their desired prices. This fisher reasoned that since buyers often will not pay the price of the fish determined by the fisher that the fishers should begin to sell their fish per

kilo with a set price. This fisher is convinced that this approach will be in the best interest of all fishers since the size and weight of the fish will ultimately determine the price. Most of the fishers interviewed agreed that fixing the price of the fish would help them to achieve better prices as they recognised that their current competition amongst one another offers potential buyers the option of working with those fishers who set the lowest prices, thus forcing fishers to succumb to market-dictated prices.

Based on participant observation, there are several factors that are shown to constrain the fishers from improving the value of their products and the marketing thereof. These include internal factors such as the lack of financial means to purchase ice and cooler boxes to maintain the quality of the fish for longer, a lack of market awareness and knowledge of area and time specific consumer interest or concern regarding their method of catch and sale, challenges in accessing markets in towns further than those with whom they currently sell because of financial constraints and transport, social incoherence preventing fishers from working together to remain firm on set prices and negotiation strategies.

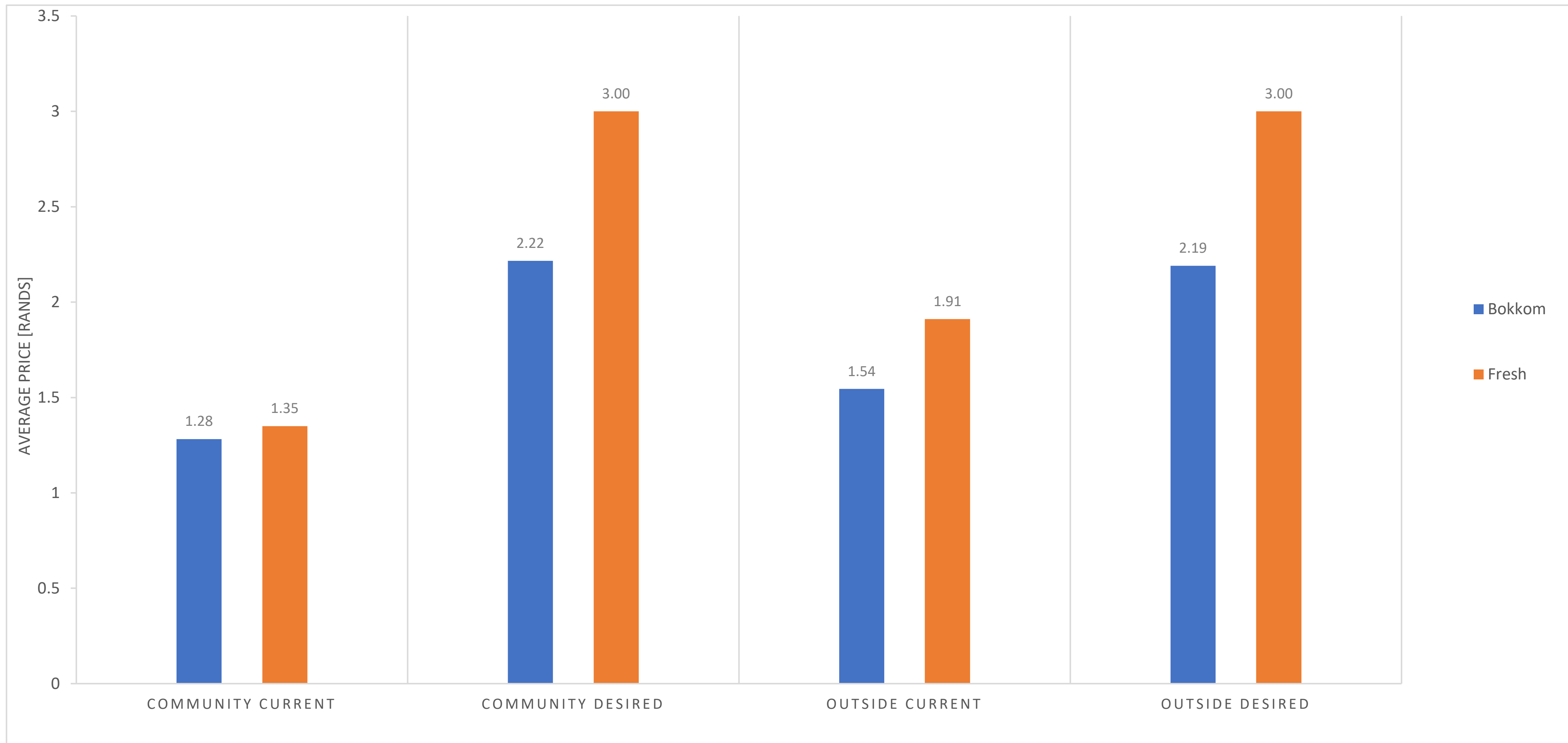


Figure 5. Comparison of the average prices that fishers receive for their fresh harder and bokkom products and prices desired by fishers. These two products are represented by the colours blue and orange respectively.

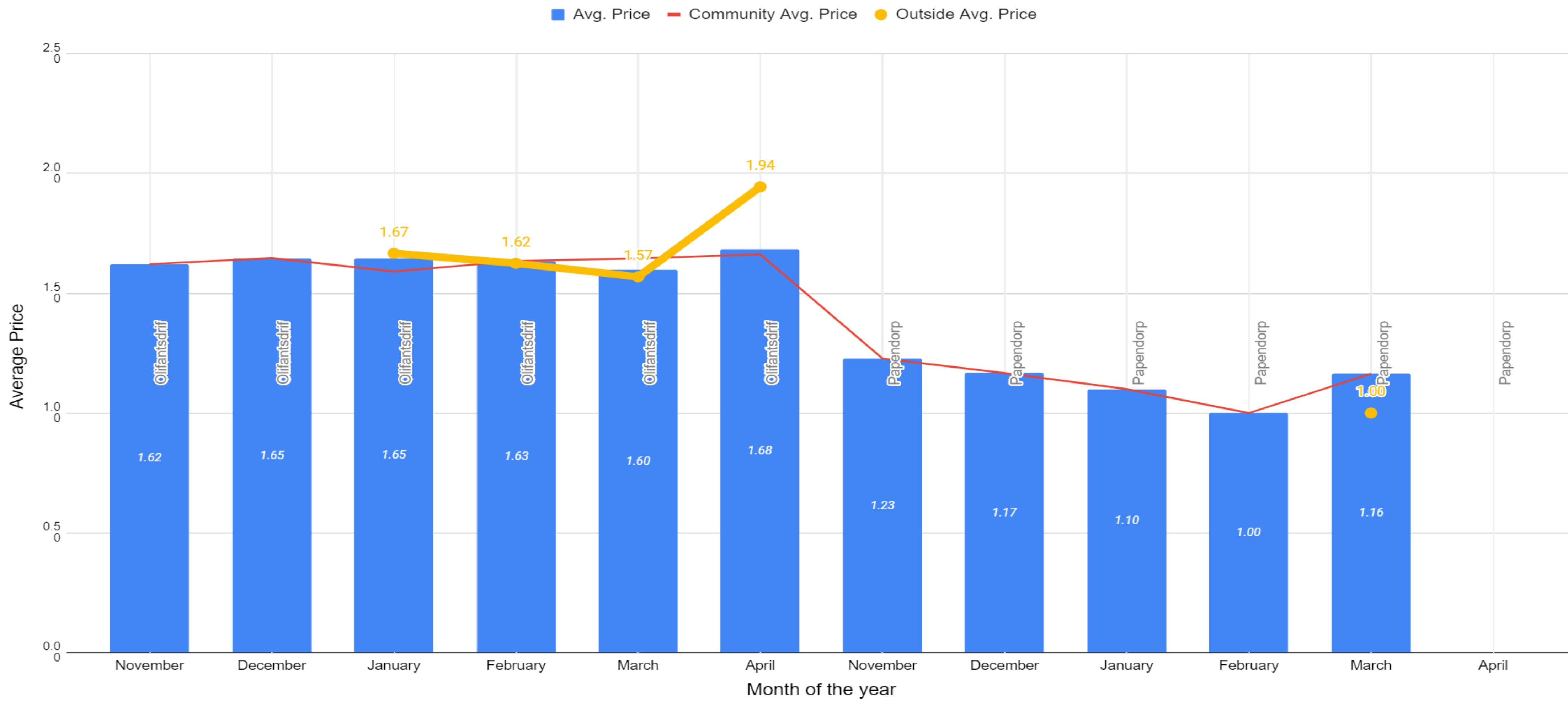


Figure 6. Average price per fish Olifants fishers received for the sale of fresh harders.

5.6. Fishers' suggestions for improving access to markets and fish prices

The fishers struggle to conceptualise new ideas for how to improve the prices they receive. The two most popular means of improving prices as suggested by fishers, are acquisition of cold storage facilities on board or at the landing site and selling their fish per kilogram. However, fishers could not explain any reasons as to why these changes would lead to an increase in price. For example, they know that in the shops their fish sells for a higher price, and their reasoning is because the marketer has cold storage – however, fishers neglect to consider that the marketer has other hidden costs like electricity and rent. Again, twenty-four of all interviewed fishers interviewed are convinced that if the marketer comes to the community, they receive poorer prices for their fish because the marketer feels he/she has done the fishers a favour by taking on the transport costs for the fishers. However, the fishers found it difficult to take account of the costs they incur if they travel to town to market their fish such as petrol costs, as well as the time, effort and potential risk of not selling their catches.

One interviewee, the 'caretaker'[5] of the Olifants harder fishers, offered suggestions for improving the marketing and sale of fish. Unlike the fishers who repeatedly referred to the need for a cold storage facility, he focused instead on the need for ice and cooler boxes to improve the quality of the fish landed which would then add to the value of their products. This fisher also spoke of establishing a facility like a central marketplace with shading and stalls with concrete slab tables where interested buyers can come to purchase the fish. For example, he suggested having a marketplace set up in both Olifantsdrif and in Lutzville. This suggestion differed from all other fishers interviewed who desired a 'kool kamer' to be the place where fishers simply drop off their catches and managers of the 'kool kamer' sell these on their behalf – thus removing the effort of fishers in selling their fish themselves.

[5] This term describes the community representative voted in by the community and used as the channel for communication between the Department of Environment, Forestry and Fisheries and fisher community as set up by the Small-Scale Fisheries Policy promulgated in 2012.

Part B

This research project also sought to obtain the views of marketers involved in the OEGF. Part B of this chapter presents the findings of this research gathered through interviews conducted with existing and potential marketers of the Olifants harder fishery.

5.7. Marketer interest in, and perceptions of, the Olifants harder resource

There is a lot of misperception around harders being a 'poor man's fish', and it seems as though the consumption of this species serves to contribute to this notion as those who generally purchase and consume this fish are of a lower socio-economic class, as argued by the marketers. All marketers interviewed were apprehensive to purchase and sell harders because they are convinced that their more affluent, and often more prized customers, do not know this type of fish and are instead interested in purchasing a more familiar and larger fish, such as hake. The general disinterest amongst more affluent customers in buying harder products demonstrates their lack of knowledge or interest in the contribution they could make to the livelihoods of the fishing communities that surround them.

Several of the marketers that do stock harders in their establishments, mentioned that they purchased harders from fishers in Veldrif which is approximately 173 km's away, simply because they know that supply from these fishers is consistent and fishers communicate well with them. Four marketers voiced that the inconsistency of the product supply made it difficult to rely on the Olifants harders for their sales and that the marketers would rather outsource seafood supplies from an established seafood industry like that of the hake industry in Cape Town where they could predict the influx into their establishment, providing them with greater security. Two marketers articulated their anxieties over the unsustainability of the fishery - expressing that they felt fishers were too heavily reliant on the already pressurized harder resource in the river and were destroying the stocks. These marketers instead trusted the established seafood industries because they claim these "have been around for long enough and may be more sustainable" (Marketer 2, Lutzville, 17 December 2019).

Another two marketers expressed that customers have a limited understanding of benefits including financial and social benefits of purchasing fish caught by SSFs like the Olifants harder fishers. This relates to a deficiency in the market understanding of the fishery and issues of social and exploitative sustainability.

Customer perceptions of the harders as a "poor man's fish" was raised by four marketers as being a factor that dissuaded customers from buying and consuming this species. Instead, they would

purchase other fish that are better known. Again, two of marketers argued that the harders are generally regarded as a low value fish species – leaving marketers concerned about customer purchases of harders being reduced in comparison with other fish species. Not only this, but another marketer explained their concern about the minimal longevity of the harders as compared with other fish species that can hold their quality in the fridges for longer and "still taste good" (Marketer 7, Doringbaai, 18 December 2019).

Customer affordability was mentioned by two of the marketers as another factor limiting the purchase of harders. They worry that if they were to increase the price of the harders, their regular harder buyers would not be able to afford the harders anymore. A lack of market capacity was argued as a hindrance for marketers since they felt as though the market cannot support increased volumes of harders. Reasons for this include an inability of potential buyers to afford the products as well as a disinterest in the product. This concern regarding product turnover was raised by six of marketers interviewed. Marketers also stated that they lacked the capacity to store fish and utilize separate cooking utensils to work with the fish and serve it.

5.8. Marketplace concerns regarding the Olifants harder fishery

The marketers interviewed expressed that they had several concerns regarding purchasing harders from the Olifants fishers. These concerns pertained both to the product itself as well as to apprehension regarding the sale of these harders. Three of the marketers spoke of their frustrations and fear of poor fisher communication which would affect managing anticipated incomes and shortfalls. This poor communication may be the result of fishers having a limited supply of data, fishers sharing phones as well as not operating under a formal structure that expects fishers to keep in regular communication with buyers in order to serve marketplace needs. Mistrust of fishers and the politics associated with dealing with these fishers was expressed to create apprehension in marketers to purchase at all from these fishers. One marketer even expressed his concerns in feeling unsafe due to the frustrations of unsupported fishers; this marketer stated that he has in the past, received threats against their establishment's security because of this.

One marketer explained how the pricing structure of the Olifants fishers was both flawed and opportunistic since fishers disagreed on a price among themselves and would try to obtain prices higher than this marketer deemed their catches were worthy of. Another marketer expressed anxieties over the health and safety of the actual product suggesting that the handling of the fish may be unclean and present a health hazard for consumption due to unsafe post-harvest processing such

as prolonged sun exposure. Two of marketers expressed their reservations over the quality of the harders, both the fresh product and of the bokkoms, stating that they felt the quality was poor due to insufficient post-harvest protocols.

More than half of the marketers interviewed believed that the prices the Olifants fishers receive for their catches are fair. This conclusion drawn by marketers was often supported by the acknowledgement of hidden costs incurred by the marketers in the resale of harders, such as packaging and cold storage. These marketers affirmed that if fishers were more professional and capacitated, they could take on these additional expenses themselves. This opinion may be the result of persistently low prices accepted by the fishers over the years - resulting in the marketers' belief that they are already contributing positively to the livelihoods of these fishers.

Figure 7 shows various marketplace concern frequencies as raised by the 11 marketplace interviewees. The percentage given is the frequency that a specific concern was raised as a percentage of all other concerns raised. The most dominant concern raised by the marketers was Product Turnover at 18%, a concern of eight of the marketers that they will not be able to resell the fresh harders to their customers if they were to purchase the harders in bulk from the fishers. The next two major concerns (represented at 12% of all other concerns raised each) were Customer Perception and Product Consistency and Reliability. These concerns both reflected six of the marketer's belief that their customers are not interested in purchasing the harders as they have a negative perception of the fish, and that the product itself is not consistently caught to provide marketers with a stable and predictable supply of product upon which to plan.

All marketplace concerns were summarised into six main concern categories; these are displayed in Figure 8 as frequency percentages. The six groupings of concern shown by the graph are combinations of concerns with a similar message; i.e., Product consistency and reliability, a mistrust of fishers (including a flawed and opportunistic pricing structure and fisher politics), concern that the harder is perceived as a low value fish species (inclusive of product longevity and quality deficiencies), a lack of market capacity (including the shop capacity, the product market and turnover being less than optimal, and customer affordability presenting an issue to raise the price of the fish), fisher communication raising marketer concerns and finally, customer perception (including the health and safety, sustainability, and a lack of market understanding of product benefits). A lack of marketplace capacity to physically store or push volumes of harders through their marketplace was the most dominant concern raised by the marketers interviewed; followed by a strong concern for the customer perception of the fishery.

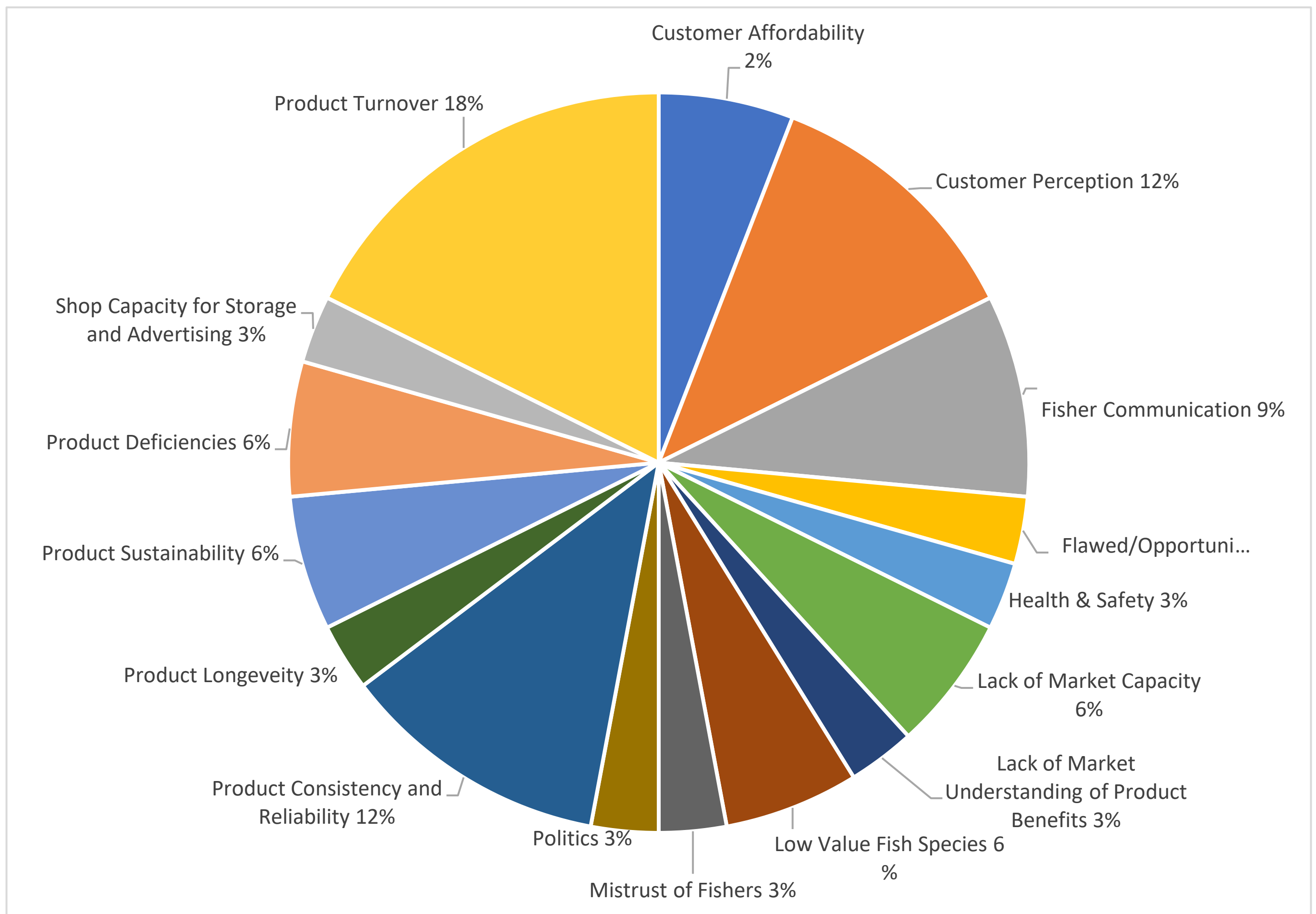


Figure 7. Marketplace categories of concern frequencies.

All marketers interviewed who actively purchase Olifants harders argue that if they sell their fish at a higher price, it will be to the detriment of their business as they are convinced that they will have a low turnover of harders in storage. Marketers' are convinced that the main consumers of the harders come from a low socio-economic grouping and so cannot afford to pay a higher price for the fish. In addition, the marketers state that those who can afford the potential increased prices are not interested enough in this product to warrant sales to be sufficient for profit generation.

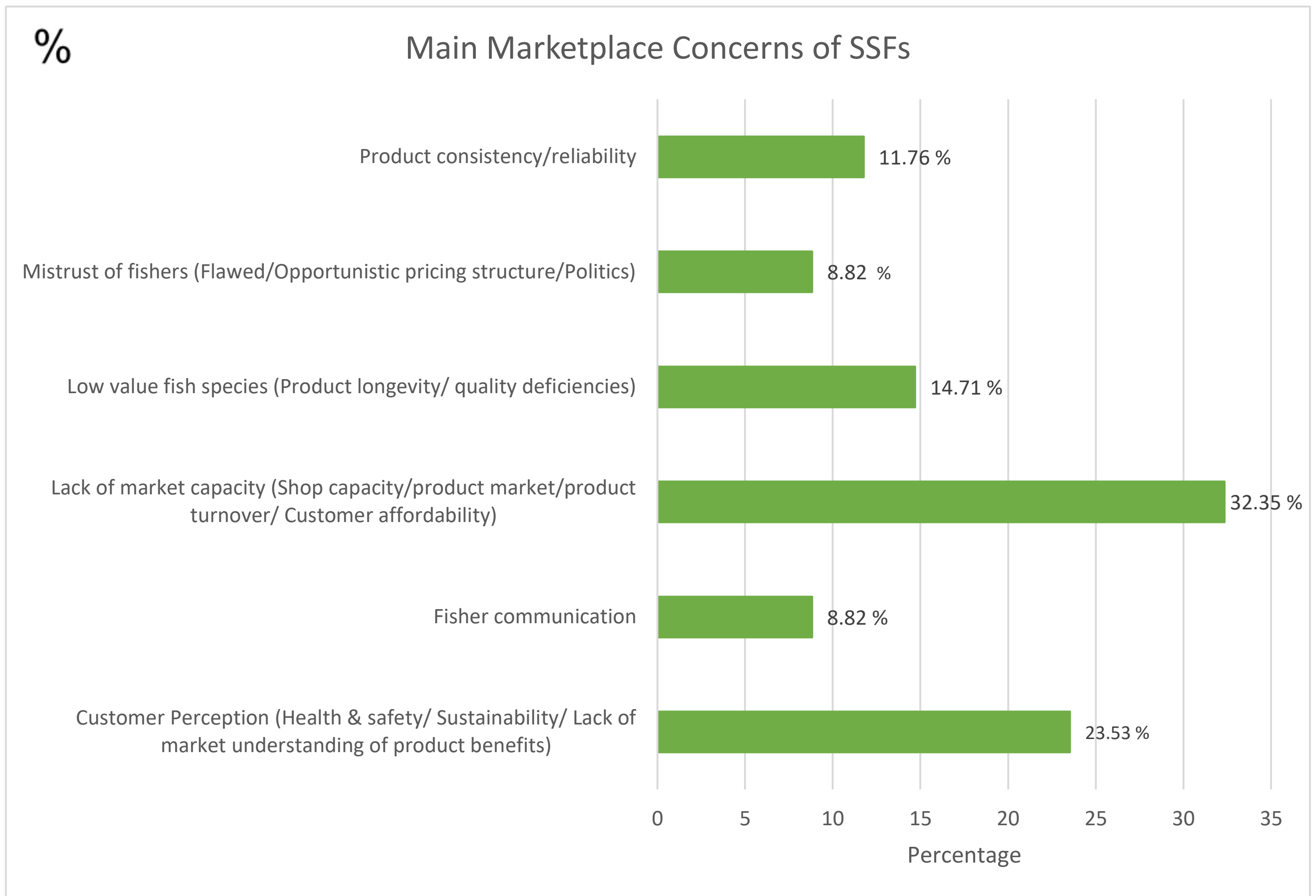


Figure 8. Main marketplace categories of concern.

Chapter 6:
Discussion

6.1. Recognising the OEGF as a socio-ecological system:

The problems related to market access and discrimination in the Olifants harder value chain cannot be disassociated from the myriad of other problems and challenges that the fishers of the Olifants estuary experience. Firstly, their history of dispossession and forced removal as well as their ongoing marginalisation and lack of secure access rights to fisheries resources means they lack the capital, business and technological skills necessary to control their position in the value chain (Sowman, 2017). These issues are intimately linked at both the collective community level, as well as at the household level. One example of this intricate connection of challenges would be that of the prolonged closure of the De Hoop dam gates at the Clanwilliam dam along with the unlawful water extraction from the Olifants river by farmers on the banks resulting in a reduction in the Olifants river water flow. This has caused the build-up of sand at the river mouth, which in turn may hinder harder shoals from entering the river - ultimately affecting the Olifants fishers' catches. Another example of the connection of problems presented in the Olifants estuary, would be when the fisher household interviews were conducted, the interviewees frequently raised that they were expecting to have begun catching harder shoals, yet they were not. These fishers were convinced that they had enough buyers of their fish, but that it was the decrease in catch volumes that constrained their supply to interested buyers. Even so, most of these fishers argued that the harders they were catching had become considerably reduced in size over the past few years. Fishers attributed the decline in fish population and the decrease in average harder size to external factors, such as reduced water flow in the river and changes in the climate. Yet, they agreed that there should be an increase in the number of fishers allowed on the river to harvest fish to enable more community members to derive their livelihood from the fishery. Based on the fishers' impoverished context and lack of alternatives, they see the estuary as a source of food and potential income which may override considerations for the integrity of fish stocks as the fishers acknowledged that they do catch undersized fish from time to time.

Over-exploitation and degradation of natural resources has often been the result of geo-political and economic processes, exacerbated further by obstinate cycles of poverty and unfitting governance arrangements (Barbier et al., 2005). Moreover, the general lack of data characterising SSFs has meant that decision-makers and managers are often uninformed of the reality of the fishery when creating policies and regulations that govern it, resulting in mixed success (Salas et al., 2007). A possible reason

for this may be the absence of fishers in research and governance, therefore leading to the exclusion of the critical in-depth knowledge that such locals possess in the decision-making process (Salas et al., 2007).

Rural communities that are essentially resource-dependent, like those residing in Olifantsdrif and Papendorp, need to withstand the weight of neoliberal driving forces behind unjust decisions in their context (Barbier et al., 2005). Consider for example, concerns about line-fish bycatch in the OEGF that prompted numerous attempts by the government to close this fishery despite lack of reliable data on bycatch volumes (Rice, 2015). Recent research (Rice, 2015) has shown that the landings of line-fish stocks as bycatch in the OEGF were much reduced in comparison with those of other fishery sectors. Rice et al. (2017) argued for how a holistic approach is required to tackle issues such as bycatch, particularly in SSFs. These authors also showed that the closing of the OEGF, which serves as a primary source of food and livelihood to the resource-dependent fishers, would not necessarily address the concerns of the stock-status of the OEGF bycatch species.

Considering the history of the Olifants community, their forced removal, neglect and oppression under the apartheid era has meant that these fishers were poor at the advent of democracy and aside from some improvements in service delivery like that of the provision of electricity, water and sanitation in this community, the Olifants fishers remain marginalised. This research emphasises that a more holistic understanding of a fishery problem can lead to more appropriate and equitable solutions. Though the afore-mentioned factors contribute to the complexity of the Olifants socio-ecological system, it is key to acknowledge that the broader context of the OEGF needs to be understood when considering improvements to the post-harvest processes affecting fishers' product beneficiation and access to markets. The historical and structural inequalities experienced by the Olifants community has made it difficult for the fishers to compete in the marketplace on an equal footing - there are so many barriers needed to be overcome. These barriers include, among others, the lack of transport and capacity necessary to keep fish fresh for longer.

The above suggests that the Olifants fishery is indeed a complex socio-ecological system where social, historical, ecological and economic aspects intrinsically link with one another, and potential feedbacks from management decisions can lead to impacts and uncertain outcomes such as food insecurity and loss of cultural identity in the fishing community (Cilliers, 2000; Bavinck et al., 2005; Berkes, 2015). Therefore, in conceptualising improvements in the post-harvest space, recognition is required of the

complexity of the system and the structural inequalities that have persisted over time to influence the unfavourable position of the Olifants fishers find themselves in, in their value chain.

6.2. The influence of poverty and marginalisation in the position of the Olifants fishers in the value chain

This study has shown that most fishers are too ill-informed of the small-scale fishing permit system so fundamental to the legitimacy of their operation. They were also unaware of the many external decisions made by powerful parties that strongly affect their lives. These fishers' exclusion from management and governance has exacerbated the gaps in fisheries data and the ignorance of socio-economic dimensions of the fishery – further compounding the challenges that continue in SSFs. This exclusion in participating in decisions that affect their livelihoods is found throughout the SSF sector in South Africa (Sowman et al., 2014). Regrettably, a lack of capacity within the Olifants fishing community, like that of minimal data availability and literacy constraints, mean that these fishers struggle to equip themselves to remain informed.

The importance of the fore-mentioned issues cannot be overlooked or simplified. Literature arguing that there exists an intrinsic connection between the conditions that impair human beings with those that damage the natural environment has long been with us (see for example, Halsey, 1997). One of the main issues facing the Olifants fishery is the poor communication and support this fishing community has received from government, as well as the exclusion of Olifants fishers from the rule-making processes that govern their fishery; these issues have resulted in their persistent marginalisation. Fishers' poverty status means that they will transgress management rules from time to time in order to secure food for their families. Although research in this area has shown that these fishers recognise the importance of rules and regulations and want to be part of the process of formulating these rules and not have them imposed on them (Hauck, 2009; Hushlak, 2012; Williams, 2013; Rice, 2015). Thus involvement of fishers in planning, rule-making and management demands management to be holistic in its approach, recognising the complex linkages across natural and socio-economic systems and seeking to protect not only the natural resources of the estuary, but also the rights and needs of its users. The new SSF Policy advocated for fishers to be more in control of the post-harvest and marketing sector of the value chain, but the advocation of rights and capacity development necessary to empower fishers has not yet been implemented.

6.3. The influence of governance on the post-harvest activities

Various international agreements offer support for SSFs worldwide (see for example, Jentoft, 2014; FAO, 2015; Cohen et al., 2017) and promote the need to create an environment that is enabling, provides assistance to fishers and ensures signatories to these agreements are held accountable in their responsibility to incorporate these international principles, actions and commitments into national legislation and implementation. There is no shortage of emphasis in these agreements' on improving the functioning of markets for small-scale fishers in order to promote this sectors' economic growth and sustainable development. These agreements also acknowledge the importance of curtailing any access discrimination fishers may face. The new South African SSF Policy obligates the state to protect small-scale fisher rights holders and, inter alia, to prevent hostile market practices that undermine fishers, ensuring instead that commitment to foster food security and the support of the post-harvest phase of value chains in SSF communities are safeguarded.

Unequal power relationships that exist between the various OEGF value chain actors highlight the need for these vulnerable and marginalised fishers to receive special support. The OEGF requires support in order to develop the local organisation and build capacity in all stages of the value chain, particularly in the post-harvest sector and access to equitable markets in order to enhance their income and livelihood security. Consequently, there should be support given to the Olifants fishers to develop functioning cooperatives as well as training and advise to improve marketing and market relations. But despite the promulgation of these international agreements and national SSFs policies, SSFs worldwide and the SSF Policy in South Africa which has relevance to the Olifants estuary, implementation of policy has been weak. The state should, as guided by agreements like that of the FAO (2015), foster, provide and enable investments in appropriate infrastructures and capacity development that would support the country's SSFs post-harvest sector to produce good quality, safe fish and fishery products.

The SSF Policy, heralded as a progressive policy, asserted the government's recognition of the significance of the sectors' contribution to the South African economy. The policy recognised that the use of marine living resources to sustain food security, serves to alleviate fisher households from falling deeper into poverty. The policy asserted that to develop this sector's economy requires the state to offer infrastructural, social and service provision support (DAFF, 2012). It acknowledged that the critical livelihood support and coping mechanisms offered by this sector far outweigh the small financial returns for fishers – most notably in poorer areas where alternative employment and social

security programmes are scarce. This can be observed in the Olifants estuary where the fishery significantly contributes to the food security of many lower income surrounding communities.

The Fisheries department undertook to enhance SSFs through focusing on equity in the value chain, increasing the growth and competitiveness of the sector through supporting fishers by empowering them to improve their incomes and productivity, whilst prioritizing environmental sustainability to ensure resources are not overexploited (SSF Policy, 2012). The Department's Integrated Fisheries Development Plan and Programme of Action (lFDP) presents the goals of the Plan to achieve what has been promised, "to create an enabling environment that encourages and supports value-adding activities and alternative livelihoods in key sectors and sub-sectors, such as Small Scale fisheries." (SSF Policy, 2012: 6). This Plan and policy are imagined creating an equitable economy in SSFs whereby all stakeholders can enjoy the maximum benefits derived from the value chain; creating an expectation for a fair dispensation for the sector and increased numbers of small-scale fishers enjoying access rights to resources.

The Olifants fishers were shown in this research to receive poor prices from their marketers with little alternative. These fishers operated under the stringent pressure of time before their fish would deteriorate in quality to the point that it would be rendered unfit for sale – the fishers refer to fish that has reached this point as "pap". This research would argue that the lack of formal and long-term effective cold chain management system placed a time pressure on the fishers that would force them to sell their fish for reduced prices. With reduced negotiating power due to this time constraint, as well as the realisation that the existing market was unwilling to offer any meaningful price improvements, the Olifants fishers succumb to 'price-taking'. This title rendered the Olifants fishers unable to break free from their persistent impoverishment. This research exposed the absence of governmental support with respect to post-harvest activities like that of ice and cold storage, alongside limited training on cooperatives that served to further hinder the Olifants fishers from becoming more organised. In fact, the Olifants fishers have still not received their fishing rights and remain reliant upon the interim relief permit.

The policy acknowledged too that for fishing communities to receive the maximum benefit from marine living resources, these communities would need to seek means of adding value to the resources they harvest and directly benefit from these additions. To this end, the policy requires the Department to assist communities with the support and guidance required to achieve this objective – even going so far as to offer mechanisms to assist fishers in the marketing of their fish. These

mechanisms include subsidy schemes for the storage of fish, skills training in areas such as business management, logistics and processing. Other mechanisms offered by the policy include subsidy schemes for the establishment of locally based and owned marketing companies, the development of a South African label/certificate for fish products caught sustainably by small-scale fishers, the development of a fishery processing and beneficiation strategy that would seek to ensure the maximum benefit from the value chain and finally, the development of finance schemes for fisheries. None of the above have been realised in the Olifants estuary.

The mechanisms discussed above are broad, promising and all-encompassing, yet have proven impractical and vague in their implementation since the roll out of the SSF Policy has been delayed. The Department acknowledged that the policy was formulated within a tremendously complex and challenging context, and that there are several factors which may impact on the success of this policy's implementation (SSF Policy, 2012). The fisheries branch is regrettably understaffed, dominated by a natural science institutional culture and lacking the resources needed to enable the fisheries authority to embrace their novel developmental role in the SSF sector (Ngqongwa, 2015). Although the policy encourages that fishing communities play a larger role within management, these communities all too often lack the capacity needed for this role to be fully realised since these communities are generally characterised by minimal financial resources, reduced levels of formal education, business experience and high levels of conflict (Sowman et al., 2013). These characteristics are present in the Olifants context and require concerted effort to address.

Sowman et al. (2013) highlighted that the realization of the paradigm shift presented in the SSF Policy is dependent upon several factors. These include the government's capacity to meet neoliberal macroeconomic policies whilst catering to the social justice imperatives necessary to transform SSFs. The authors argue that state intervention and reform are necessary to realise these imperatives. Moreover, the capacity within the SSF Directorate to adapt proposals to be appropriate to context is constrained. Another challenge presented in the implementation of this policy, is its shift from an individual rights-based approach to a community-orientated approach to rights allocation through establishing an entity to hold the right, namely a cooperative. This new approach, though well-intended to include more fishers into the system and promote social cohesion to formalise the fishery, may not be viable in all SSF communities, at least not without the proper training. This research questions whether the flow of information from the authorities through the cooperatives is the most appropriate approach considering the capacity constraints in the Department to aid the establishment of these social structures. In this regard, the Olifants' cooperative has not yet been established for the

harder fishery and the fishers lack understanding of regulations that pertain to management of their fishery.

In order to achieve the aspirations of this policy and significantly re-orientate the sector presents a massive challenge to be overcome. Reform has been slow and public participation in decision-making, especially of the poor and marginalised, like the Olifants fishers, have been limited. Ultimately, the translation of the intentions presented in this policy to application in real-life contexts, and particularly for Olifants fishing communities, has fallen short of the policy's intentions.

It has been stressed in this project that natural resource problems are characterised by complexity and necessitate institutional adaptation and responsiveness to remedy (Lockwood et al., 2010). To achieve resource sustainability and social equity, weak governance and its illegitimate rules, insufficient management plans, compromised guiding principles and obscure decisions need to be combated. And the correct mode and capacity of governance must be chosen to govern a specific context, like that of the OEGF, to ensure the best possible outcome for good governance to establish the policy's goals. Of course, no governance mode operates outside of the political and economic sphere as governance inevitably concerns economic processes and means of environmental operation (Swyngedouw, 2006). The challenge for policymakers then, is to understand the origin and nature of the ways in which different modes and capacities of governing institutions fail and succeed so that appropriate policy responses may be devised, communicated and subsequently implemented to sufficiently tackle complex natural resource management challenges and realise the support small-scale fishers need to attain improved positions in the value chain, offering value-added fishery products and negotiating fair pay in the marketplace.

What is often the issue then is a functioning mode of governance that is inappropriate to context. More sustainable outcomes are coupled with governance that is best suited to the system, as opposed to the evidently failing approach of 'business as usual'. This research has demonstrated that governance in the South African SSFs sector is weak, predominantly in the post-harvest phase of the value chain, and has offered limited support for small-scale fishers, as this research has outlined for the fishers of the Olifants estuary who struggle to overcome 'price-taking', add value to their products and gain access to equitable markets since they enter the local marketplace with a lack of knowledge, technology and finances.

6.4. Vulnerability of Olifants fishers to post-harvest losses in the value chain:

6.4.1. The vulnerability of women in SSFs

The promotion of a human-rights based approach in the new SSF Policy, recognised the need to address women's historical legacy of prejudice and inequality. The vulnerability and historical discrimination of women in SSFs is also emphasised in international agreements, especially in the voluntary guidelines (FAO, 2015). This policy argues for the importance of placing gender equity at the centre of transformation in the sector as it acknowledged the critical value-adding and supportive role women play in SSFs. Policy mechanisms require that women be empowered to exercise their rights to participate in resource management, policy development and implementation, most notably because "women generally give high prioritisation to socio-economic issues and food security" (SSF Policy, 2012: 20). Moreover, these mechanisms include ensuring women receive training to participate in marketing through skills development in the areas of business administration, processing, and marketing with supportive facilities and capacity building initiatives to address the concerns and needs of women.

The SSF Directorate stated that it would encourage the development of local markets for SSFs and ensure that the benefits small-scale fishers derive are maximised. This assertion included initiating several positive incentives to promote local marketing actively alongside increasing the power of small-scale fishing communities to engage equitably in these marketplaces. Specific measures were to be introduced to support women in developing value-addition activities in the post-harvest stage of the value chain, strengthening their role in fish processing. These measures extended so far as to include the establishment of meaningful opportunities to empower women to participate in and benefit equitably from the SSFs sector. Yet, again the Department acknowledged that its "own capacity needs to be strengthened to implement the more participatory and integrated approach advocated in this policy" (SSF Policy, 2012: 26). In this regard, the Olifants SSF is unquestionably male dominated, with fishers being solely comprised of men whilst the women in the community play instead a supportive role by mostly managing the household. Women's roles in this fishery only become prominent when fishers have returned from a successful catch while the women make calls to buyers in order to sell the fish. These women confirmed that they would like to become more involved in the post-harvest activities of the Olifants fishery.

6.4.2. The vulnerability of fishers to market forces

Considering another aspect of vulnerability, Rosales et al. (2017) argued that small-scale fishers are repeatedly found to be price takers and to earn the lowest margins of all other actors in the value chain. Although small-scale fishers play the catalyst role in the value chain, their benefits are low in comparison to that of other actors. Furthermore, small-scale fishers have been particularly identified as the most vulnerable actors in the value chain since they are often trapped in unfavourable positions that leave them unable to make decisions regarding their own welfare (Eenhoorn and Becx, 2009). This vulnerability of fishers in the value chain was again displayed in the Olifants harder fishery with fishers affirming that the market pressures they experience force them to please their buyers in order to make sales – thus rendering these fishers as price-takers.

The Olifants fishers were shown to sell most of their catches within their respective communities (see Figure 3). Although the community is less able to pay market-related prices for the fish, it would appear that the Olifants fishers are willing to accept reduced prices offered by community members. This willingness serves to reinforce bonds within the community, contributing to a strengthened social cohesion among community members. However, it is often the Olifants fishers' lack of knowledge regarding the potential markets for their harders, as well as their lack of transport to access these markets, that exacerbate the constraints to expand their markets.

All fishers interviewed believed that the fish they sell is of a good quality and that they utilise resourceful methods, acquired from their forefathers, to sufficiently keep catches fresh. However, because these fishers have no ice or cooler boxes to maintain the quality of the harders for an extended period, they are pressured to sell their fish before the quality deteriorates beyond an acceptable limit. Through the interviews, it became apparent that the fishers do not realise the limitations imposed upon them by the restricted time they have to sell their fish to maintain its quality. The fishers are aware that as the day progresses the quality of the fish rapidly reduces, as they would often comment on how prolonged sun-exposure would make the fish go 'pap', but their sensitivity to the freshness demanded by potential buyers and consumers is partial. They lack the knowledge that improved freshness and good quality has the potential to increase the prices they receive. Not only that, but the constraint of restricted time to find and negotiate with buyers and receive the highest possible prices, strips the fishers of their negotiation powers. As a result, these fishers are forced to sell their catches as fast as possible to avoid having leftover, 'pap' fish. The rich traditional knowledge acquired by the Olifants fishers is the product of years of experience (Hushlak, 2012; Williams, 2013), yet the time constraints incurred by this strategy to sell fish fast enough before it deteriorates in quality, ultimately translates into a compromise on the price as fishers are forced to sell. This insight

affirms that Olifants small-scale fishers are not much different than other small-scale fishers that generally fail to maximize the value of their seafood products due to production, distribution and marketing challenges (Da Silva, 2011; Purcell et al., 2017; Beran, 2018). These challenges include poor infrastructure and handling practices (e.g., storage, transportation, market), a lack of access to potential markets and inequitable market relations that contribute to various types of post-harvest loss (Da Silva, 2011).

Moreover, it appeared that the Olifants fishers' insights into conceptualising means of achieving better prices and markets were limited. Fishers were able to suggest only two options for adding greater value to their catches, yet they could not explain why these options would translate into any meaningful change in their value chain position. This limited capacity to envisage a higher value product and more equitable market access could be linked to the structural inequalities and discrimination they have experienced in the fishery value chain over the years that constrains their ability to conceptualise a fair marketplace. Olifants fishers also lack any exposure to modernised and large-scale fishery operations, as well as the array of influences that affect the market price of their fish. In addition, they did not realise how the presentation of their catches may affect how their product is perceived by their buyers. As mentioned in the findings of this research, fishers' means of communication and prediction of catches are difficult for marketers to work with (see Figure 8). Marketers want the security that predictable suppliers offer them; this is not what they receive from the Olifants fishers. Williams (2015) found that marketers often chose not to purchase seafood from small-scale fishers because of unguaranteed and inconsistent availability of catches that present a challenge for the marketers to engage in trading relationships with these fishers.

6.4.3. Factors that impede fishers' full participation in the post-harvest activities

It is obvious that a variety of factors play a role in affecting the marketing of Olifants' fish and the perpetuation of poverty in these communities. Socio-institutional mechanisms that govern people's access to marine living resources, instead of the resources themselves, critically influence the vulnerability of small-scale fishers to poverty (Bene, 2003). Bene (2003) suggests a typology of processes that exist to accelerate poverty, these include key mechanisms like that of economic exclusion, social marginalisation, class exploitation and political disempowerment. Much international literature confirms that poverty and marginalisation of small-scale fishers places them in a weak position, leaving them as price-takers with little influence in price negotiations of fish and fishery products (see for example, Jentoft, 2014; Nayake et al., 2014; Cohen et al., 2017; Johnson et

al., 2018). However, it is not only capacity constraints that disempower small-scale fishers like those fishing at the Olifants estuary, to improve their position in the value chain. The internal challenges that constrain fishers from realising a greater position in the value chain can be attributed to a lack of capacity, that is both financial and strategic, as well as a lack of social cohesion, organisation and a functioning cooperative to address such issues. This lack of capacity and social cohesion serves to constrain the access of the Olifants small-scale fishers to market opportunity. There are also those external factors that reach beyond the control of fishers; these include market interest in the product, consumer perceptions of resource sustainability and customers' purchasing power.

6.5. Olifants marketplace considerations:

6.5.1. Market perceptions

Most restaurants generally source their seafood from preferred commercial distributors, both large and small (Williams, 2015). Through the marketplace interviews conducted, it was found that there was a high degree of willingness to consider sourcing harders directly from the small-scale fishers. However, marketers' concerns for profitability and customers' poor perceptions of the product, far outweighed their willingness to commit to purchasing from the fishers. In most cases market forces and perceptions override restaurant or shop owners, and chefs' willingness to be more proactive in terms of environmental sustainability endeavours or to support local seafood operators. Therefore, whilst probably being aware of the positive impact that sourcing from the local small-scale fishers would have on enhancing fisher livelihoods, too many challenges and concerns act to suppress active change in behaviour on behalf of these marketers – this was also observed in the work conducted by Williams (2015).

South African fish consumers appear to generally have a superficial understanding of the seafood industry. With a wide-ranging complacency among South Africans regarding fish consumption, consumers generally possess a limited understanding of the conservation status of the fish species presented on their plate, of where the fish was caught, by whom it was caught and what the method of capture was. Several of the marketers interviewed asserted that even though much awareness around the sustainability of certain fish species has been raised by eco-labels like SASSI, few consumers know the difference between the various fishing sectors, the harmful effects of bycatch of certain fisheries or the dependence of small-scale fishers on fishing for livelihood sustenance and cultural validation and expression. While there is a definite trend in some countries, retailers and

restaurants to move towards traceability of fish caught, a different approach to the sale and marketing of fish is still required (Williams, 2015). This limited awareness among seafood consumers of the reasons for this widespread confusion/apathy are not clear, although Tetley (2016) found that consumers feel marketers should make it easier for them to make sustainable choices. However, this customer confusion/apathy suggests a need for greater ocean literacy among the general public (deCharon et al., 2013; Fauville et al., 2019) as well as awareness raising of consumers regarding the impact of their seafood consuming choices.

Market price, species availability and ease of accessibility to consumers are argued to be the most influential drivers of the seafood market within South Africa (WFF, 2011). Although empirical evidence asserts that consumer awareness has grown in the country with the introduction of eco-labels (WWF, 2011), these labels fail to enlighten consumers about the importance of social well-being of fishers involved in the fishery value chain and whether the fishery is being managed sustainably or not (Gutierrez and Thornton, 2014). It remains critical then for marketers to broaden their perspective by pursuing positive changes like that of sourcing resources locally, ensuring payment of primary producers is reasonable and fair, and engaging consumers on the value of the social aspect of a fishery like that of the Olifants estuary (Andriof and Mcintosh, 2001; Forum for the Future, 2011).

In terms of improving the marketplace for harders caught by the Olifants fishers, the managing director of ABALOBI NPO, expressed the view that the only way fair prices would be obtained by these fishers would be if big retailers were encouraged to buy large and consistent harder volumes per month and be willing to build the capacity to support these volumes, whilst remaining flexible to fishing fluctuations. However, this is not an investment that is likely to be realised (ABALOBI Managing Director, 12 December, 2019). The managing director argued that retailors are not interested in investing when there is such a large risk involved. From a purely entrepreneurial perspective, that is understandable. There are so many uncertainties associated with this fishery, including concerns about the product – it’s sustainability, the consistency in supply, as well as reasonable concerns about sales, customer perceptions and fisher professionalism.

6.5.2. A centralised marketplace?

The idea of a centralised marketplace suggested by the fishers needs to be further discussed with fishers to explore the benefits and constraints of this approach. This research proposes that such a centralised marketplace would need to be strategically positioned, for example at pay-points for social

grant-holders, therefore getting fish directly to the very communities that purchase the fish from the retailers. This suggestion, if realised, would mean that fishers have the potential to market their own fish. Therefore, instead of fishers selling to the butchery who then sells the same fish to the same community for a higher price, this marketplace can act to directly supply the consuming community with fish - cutting out the middle person (i.e., the current marketer) and thus creating the potential for fishers to receive higher prices for their catches. However, the problems of time, transport and limited negotiation powers would still need to be addressed. If these barriers can be overcome, this would serve to enhance the food security and protein intake of these purchasing communities. Such a centralised marketplace would require much thought and planning to establish and potentially require the assistance and support of local government and non-profit organisations.

There are however assumptions associated with the suggestion of a centralised marketplace. The first assumption made is that the outside purchasing communities would be interested in buying fish from the fishers when the fish is still fresh and would be able to afford the prices fishers determine. The purchasing power of these communities would need to be established to inform the setting of a fixed price for such a marketplace. The second big assumption made is that the harder resource is stable enough to supply the marketplace. However, inconsistency in supply and dwindled catch volumes over time have been confirmed by fishers in this study. In fact, twenty-seven of the twenty-nine interviewed fishers stated that they have enough buyers, but often it is the supply of the fish that presents a problem to meet buyer demand. Market proposals, therefore, will ultimately remain dependent upon the ability to maintain desired volumes of the harvested resource.

6.5.3. Consensus on a fisher-determined price

Setting community pricing standards in SSFs that are appropriate to the diverse array of socio-economic contexts, is argued to safeguard fishers from financial discrimination in the value chain (Purcell, 2014; Hamilton-Hart and Stringer, 2016; Jupiter et al., 2017). Petrik and Raemaekers (2018) argued similarly that pricing standards can empower and upgrade the position of fishers in the value chain. Consideration of the economic implications of having a fixed price and/or selling fish per kilogram instead of per unit of fresh harder and bokkoms is required before any decisions can be made. There may be anticipated benefits of fixing the price, such as community cohesion and the support generated among fishers to stand firm on a fisher-determined price. There may also be potential pitfalls such as reduced competition and diminished incentive to improve the processing of catches. A loss of competition among households may act as a supportive outcome for the community.

Selling the fish per kilogram will allow for the mixture of different fish sizes caught in the nets so that both fishers and buyers can profit from a standardised pricing of fish by weight that instils trust in the market. There are many uncertain outcomes of fixing the price of catches and altering the method through which prices are set. In the context of the Olifants fishery, this issue requires further exploration and experimentation before a decision can be made. Nonetheless, this research argues it is necessary to set a baseline price associated with a particular catch volume, fish size and seasonality so as to cater for the natural fluctuations that determine supply and demand. In the current situation, fishers struggle to self-organise and agree on what a fair price for their fish would be (see Table 1), and thus it becomes difficult in this context to gauge whether a price agreement may ever be realised and adhered to.

In determining a fixed price, one would need to discuss the idea thoroughly. Consideration needs to be given to ascertaining whether this fixed price would be determined by catch volumes and seasons of the year in order to account for demand and supply dynamics. For example, during the winter months, when catches are scarce and demand for the harders subsequently raise, increasing the fixed price would potentially be an appropriate response. There needs to be a consideration of the constraining factors that drive market demand and supply fluctuation, as well as of those factors that affect agreement on fixing the price of fish; these include community self-organisation, agreement, commitment and intellectualisation of such an idea.

6.5.4. Market challenges and contribution

Wentink (2014) argued that small-scale fishers often forfeit potential income through rigid post-harvest activities that stunt product value addition - this was observed in the Olifants fishery system. The fishers Wentink (2014) observed receive marginal revenue from the informal markets within their own communities. This trend was also observed in the case of the Olifants fishers whose dominant place of sale is within their own communities (see Figure 2). Olifants fishers often find themselves excluded from external markets due to financial limitations, and other important issues such as a lack of transport, lack of ice or cold storage to preserve the fish, insufficient understanding of market expectations as well as the market's misperception and limited appreciation of this local fish.

Furthermore, legal restriction on what fish can be harvested has shown to contribute to the persistent marginalisation and exclusion of small-scale fishers from the marketplace (Isaacs and Hara, 2015). This was certainly true in the case in the Olifants fishery where the number of fishers allowed on the river has reduced steadily over the years and any by-catch species caught are considered illegal and must

be handed in to the enforcement officer (Rice et al., 2017). As previously mentioned, the SSF Policy intended to ensure access to marine living resources and maximisation of benefits for traditional fishers in South Africa. These objectives have not yet translated into meaningful improvements for the fishing communities of the Olifants estuary. For legal access to result in entrepreneurial opportunities for small-scale fishers, upgrading of the SSFs value chain should remain a key focus.

Based on this research, the fishers of the Olifants estuary seem to be "stuck between a rock and a hard place". Firstly, the very resource upon which they rely is fairly heavily exploited, and so some consumers possess reasonable concerns about the sustainability of the resource. These fishers are also situated far from Cape Town - where they stand a better chance of accessing market opportunities. Beyond all of this, marketers and their consumers have little to no pallet for harders or bokkoms. This leaves the fishers little choice but to accept unfair market forces that persistently leave them in a vulnerable position.

On the other hand, the value of this fishery to local food security for their own community members, surrounding farmworkers and people living in informal settlements and communities outside of their own, is immense. Olifants' fish is also affordable at the prices set by the local fishers. However, this contribution to local food security and provision of accessible protein is insufficient to justify the subsequent need for fishers to be financially subsidized by other members of their households because their income is so low. In South Africa, fish consumption is relatively low by comparison to other preferred livestock and poultry protein (Delport et al., 2017). However, fish remains a vital source of protein in those communities where other protein sources are both scarce and too expensive to access. The contribution of SSFs, like that of OEGF, to food security through the provision of affordable protein, or other food products such as bokkoms to the broader community, should not be underestimated.

6.6. Addressing market access challenges

6.6.1. Marketers' suggestions for improving the value of Olifants Estuary harders

The ultimate success of the harder marketplace depends upon several factors. There are those factors that can be controlled by the fishers and those that can be controlled by the marketers. The fishers themselves can try to better organize their fishery by adjusting some of their post-harvest activities. These include cleaning the fish more thoroughly, keeping the fish cold to improve the quality and presenting their catch to their buyers in a more professional, organised and timely manner. This would

improve perceptions regarding the health and safety of the products purchased. Since marketers are most likely disconnected from the post-harvest activities due to the segregation of living circumstances, the improved presentation of the product to the buyers would create a greater incentive for the marketer to trust that the post-harvest processes utilized by fishers have been effective, hygienic and thorough. Improved communication between the fishers and their buyers would enable marketers to plan their sales more efficiently. Currently the marketers are concerned that they do not know when the fishers are fishing and are often required to rapidly respond to the catches when they are unexpectedly supplied. This is not helpful for the marketing of the harders which requires a stable and/or predictable influx of products in the establishments in order to appropriately advertise and maximise sale opportunity. On the other hand, the marketers can elect to incorporate a greater sense of sustainability into their operations and decision-making. Greater consideration of the social importance of their marketplace choices, broadening their understanding of sustainability and realizing the impact of the current pricing structure on the socio-economics of local communities, has the potential to change the current marketing dynamics and improve the outcomes for the community and the environment.

6.6.2. Dealing with the constraints faced by fishers

Where possible, the Olifants fishers should avoid post-harvest losses and instead seek ways to create value addition, building also on traditional and local cost-efficient strategies, local innovations and accessible and appropriate technologies. Whilst changes to several of the shortcomings in the post-harvest activities of fishers can help to address some of these marketplace concerns, there are several concerns that fishers may not be equipped to address. Assistance from an external organization (e.g., an NPO) or another actor (e.g., private sector player) would be required to remove some of the barriers to accessing the marketplace and improving the quality of the fish products. Local authorities should play a proactive role in facilitating access to and equitable participation in local markets, promoting non-discriminatory trade for SSFs products. Local authorities should likewise work to introduce trade regulations and procedures that support trade from SSFs products like those of the Olifants' estuary. The Olifants fishers' limited resources and capacity means that they are unlikely to be able to overcome these barriers on their own. Ultimately, capacity development is required to empower all SSFs stakeholders and especially women, and those vulnerable and marginalised groups to empower them to adapt to, and benefit equitably from, opportunities in local markets while minimising any potential negative impacts.

If the price of the fish were to increase substantially, sales within informal communities may decrease dramatically as this product may become less affordable. This could potentially mean that catch volumes supported by the marketers would be reduced if they lose their largest purchasers of the harders and subsequent consumers do not fill this missing gap. An increase in harder prices may in turn translate into an improved perception amongst more affluent consumers that this fish is a desirable species. On the other hand, harder sales in the restaurants could remain low because of the rigid seafood choice traditions and persistent perceptions of more affluent customers towards the consumption of this species of fish. Even with the suggested interventions it's possible that sales may remain totally unchanged. It is difficult to anticipate changes in this regard without further research and experimentation.

Chapter 7:
Conclusion, Recommendations and Future Research

7.1. Conclusion

This research has demonstrated that the Olifants small-scale fishers fail to maximize the value of their harder products. This loss acquired at the post-harvest stage of the value chain is intimately linked to the traditional post-harvest practices of fisher communities which in turn is influenced by their socio-economic context and capacity. The challenges faced by the Olifants fishers to improve or harness more modern post-harvest measures include poor infrastructure and handling practices, a lack of access to potential markets and inequitable market relations. There were two overarching aims of this research. Firstly, this study aimed to better understand the post-harvest activities of the OEGF. Secondly, this research aimed to identify opportunities for value addition and improving market access for the Olifants fishers.

The analysis of the post-harvest phase of the OEGF has been conducted to better understand the activities and processes of this phase of the fishery value chain and the barriers to market access and fair pricing. Based on interviews with fishers' and marketers' proposals for upgrading and improving the quality of the harder product and market access have been identified. This analysis has investigated how the fisher actors in the value chain operate with regards to their post-harvest activities, how these fishers interact with marketers, what information is shared between these actors, what power relations exist in the market and how these relationships evolve.

Many Olifants small-scale fishers are dependent upon the river for its resources, yet they require additional financial support from others in the home to meet household needs since they do not make enough money from the sale of their catches. Catches are highly variable depending on the season, environmental conditions and the general state of the resource. Fish catches are used to keep fisher families food secure as well as provide a source of income for other household needs. Catches are separated into four different categories when landed including fish that will be sold (outside or in the community) and fish that will be consumed (in the home or dried and stored for future use). This separation of catch is based on the volume of fish caught, the size of the fish and the demands of the household at the time of the catch. Women were shown to be marginalised in this fishery with few livelihood alternatives available to them. Of the cohort of buyers that the Olifants fishers engage with, fish is most often bought by members in the community, 'from the hand', since most of these fishers

lack the transport and knowledge required to access alternative markets. The Olifants fishers are vulnerable to power dynamics with the external buyers in the OEGF value chain, since price negotiation power rests ultimately with buyers. Fishers' impoverished context, capacity constraints to travel far and keep their fish fresh for longer, work together to hinder these fishers' ability to improve their position in the value chain. The Olifants fishers are clearly price-takers; they believe that they must ultimately keep their buyers happy and thus settle for prices offered. Moreover, these fishers struggle to conceptualise what a fair price for their fish would be, as well as to agree with other fishers on a set price for each size class of fish sold.

Several factors act to constrain value addition in the post-harvest phase of the OEGF. These include fishers' lack of financial means to purchase and utilise the equipment and tools required to maintain the quality of their fish. Their knowledge of the markets' interest in and perceptions of their fishery is limited. The Olifants fishers are not well organised and do not operate as a collective when engaging with buyers and considering marketing strategies. However, they work together to secure transport to take large volumes of fish to the nearby towns. In general, these fishers struggle to work collectively to address many of the issues that face their community. Moreover, the Olifants fishers struggle to discuss and suggest improvements in the post-harvest phase of their value chain, perhaps as a result of their limited education and the belief that any meaningful change to their circumstances can be realised.

Marketers identified several concerns regarding the OEGF post-harvest activities and processes. These pertain to product inconsistency and reliability, a general mistrust of fishers with respect to their pricing and internal politics, market perceptions of harders as having lower value, lack of market capacity (to store and increase volumes of fish purchased), poor fisher communication and finally, customer perceptions of harders as a 'poor man's fish'. Regular purchasers of the Olifants fish argued that if the price of the fish and fish products were to increase, the regular consumers would not be able to afford this fish. In addition, there is insufficient interest in this species amongst more affluent customers to encourage marketers to purchase greater volumes and the lack of a consistent supply of fish provides yet another barrier. The market appeared, therefore, unaware of their potential to empower the Olifants community by supporting this fishery and instead, as a result of operational pressures, chose to forgo this potential and source fish from more formalised and reliable sources.

This research suggests that there remains a failure of government to recognise and respond to the vulnerable circumstances of the fishers of OEGF and to view the fishery as a socio-ecological system. Governments' lack of attention to issues such as the abstraction of water (from the Olifants estuary by farmers) and illegal recreational activities at the estuary, demonstrates their lack of understanding of the linkages between the resource and social conditions at the Olifants estuary. Moreover, this shortfall plays out in the failure of the SSF Policy to improve the position of small-scale fishers in the value chain, to counteract inequitable market forces and to empower fishers with the capacity required to engage meaningfully in the decision-making processes that affect their livelihoods. Lack of government support to develop facilities and markets and provide training for post-harvest activities has resulted in the ongoing marginalisation of this fishery. This was most certainly revealed in the Olifants fishing community with fishers employing traditional means of post-harvest activities that leave them vulnerable to market forces that perpetuate the trend of small-scale fishers earning the title of price-takers. This investigation of the dynamics of the Olifants marketplace, has demonstrated the power elitism that exists in this marketplace and the various challenges facing Olifants fishers to improve their position in the value chain.

This study confirms that inequitable market forces exist in the Olifants value chain, and these small-scale fishers lack the capacity and resources required to add value to their fish products and participate equitably in post-harvest activities and market negotiations. It is hoped that this research has provided a basis for future interventions to address some of the barriers identified, explore opportunities for value addition and promote sustainability and equity in the marketplace. The findings of this research will be shared with the Department of Environment, Forestry and Fisheries Small-Scale Fishery Directorate. Support from government, NPOs and other social partners will be required to address some of these barriers and improve market access. The goal is to ensure that the primary harvesters of the Olifants harder resource receive a fairer share of the total economic value of their catches by maximising the potential for income derived from value-added products.

7.2. Recommendations

Considering the findings and conclusions presented above, this final section of the dissertation highlights five main recommendations. These include proposals to reinstate community-based data capture (as is the case in terms of the ongoing logbook submissions that extend beyond the time frame of this research), facilitate discussions on addressing barriers to producing a quality product, participating in the marketplace and exploring the idea of a centralised marketplace, establish a

functioning cooperative in the community to improve internal organisation amongst fishers, and finally, to identify and enlist external support to aid improvement of post-harvest activities and marketing. Feedback on the findings of this research at a workshop in the community will provide the opportunity to begin discussions on some of these recommendations. Practical suggestions to improve cold chain management and buyer engagement such as ensuring better cleaning processes, employing innovative ways of creating ice and of keeping fish cool for longer as well as more transparent and pre-emptive communication with buyers about expected fishing days and improved professionalism in presentation of fish products to buyers, could be explored at this feedback workshop. However, support from government and NPOs to move from discussions to practical action and implementation will be required.

With regards to data capture, there is a need to revitalise the data monitoring system that was established in the 1990s (Sowman, 2003) and involve the Olifants fishers in gathering data regarding their fishery. This would require assistance from a NPO or research group and the training of local fish monitors. Considering the uncertainty of the future of the Olifants fishery, the lack of data on the fishery and the power of government scientists to determine fishing effort across sectors, information gathered and owned by fishers is both empowering and valuable in community-scientist-manager discussions regarding the effort levels allowed in this fishery (Sowman et al., 2018). The data captured in the logbooks used in this research, has the potential to empower fishers to hold a more informed position in the value chain and to challenge unfair governance decisions regarding the management of the fishery.

This research proposes that a centralised marketplace be established. This marketplace is envisioned as a place where fishers have the potential to market their own fish, and in so doing avoid experiencing possibly exploitative relations through usual market channels (Barclay et al., 2016; Hamilton-Hart and Stringer, 2016). Much effort would need to be invested into the establishment and operation of such a marketplace and support from external partners would be needed. This proposal including consideration of anticipated benefits and shortfalls, should be deliberated amongst fishers at the feedback workshop anticipated to be held in Ebenhaeser when the COVID-19 restrictions allow the resumption of travel.

It is obvious that several factors play a role in influencing the marketing and beneficiation of fish products from the Olifants estuary. Ongoing poverty and marginalisation of fishers in these communities is a major factor constraining improvements in fishers' market access and attaining better prices. The Olifants fishing community often look to researchers and other external workers to help solve problems, or in some way provide a means to solve them. This expectation is to be expected given their history and harsh socio-economic realities but presents a constraint facing the Olifants fishing community to take more control of their fishery and livelihoods. There is the need in this context to reduce the dependence of these fishers on external help and instead empower them to tackle issues on their own through the building of capacity. Although the community's impoverishment, remoteness of location and limited alternatives make such empowerment challenging, their reliance on outsiders to help tackle their problems, must be addressed. This research proposes that the establishment of a functioning co-operative will provide a more formalised and unified platform from which fishers can work together to improve their post-harvest activities and access to equitable markets, as opposed to the disjointed and competitive position the Olifants fishers were observed to operate from. This establishment will require support from NPOs and researchers, as well as the appropriate training to ensure it operates effectively.

7.3. Future Research

Recommendations for improving post-harvest activities and processes have been proposed by this research. These include fishers taking greater responsibility for professionalising their operation, adjusting several of their post-harvest activities, engaging more efficiently with their buyers to combat the marketplace concerns raised and addressing those suggestions offered by the marketplace that are achievable. Although the proposed adjustments to the post-harvest activities of fishers are commendable, whether they will translate into meaningful price improvements for fishers is difficult to ascertain. Thus, further research is necessary to explore whether fishers support any of the above recommendations, ascertain what actions and resources are needed to affect these improvements and whether these adjustments realistically serve to upgrade and empower the position of Olifants small-scale fishers in their value chain. Continued research on the sustainability of the fishery, the important role that women can play in the post-harvest phase of this fishery's value chain and further analysis of the Olifants fishers' post-harvest activities captured in the logbook submissions is important to addressing data deficiencies in this fishery and creating the potential for fisher empowerment through an increased knowledge and understanding of their own fishery.

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Appendices

Appendix A: Questionnaire for fishers

(English & Afrikaans)

Understanding family dynamics

1. How many people fish in this house?
   Hoeveel mense in hierdie huis vang vis?

2. How many members of this household have registered rights to fish?
   Hoeveel van julle het n permit om te vis?

3. How often do the fishers in this household fish?
   Hoe dikwels vis die vissers in hierdie huis?

4. How dependent is this household on the fish resource for food and income?
   Hoe afhanklik is julle van visvang?

5. Are there other sources of income that this household's needs are sustained by?
   Kry julle geld of inkomste van iets anders? (of Doen julle ander werk om geld te kry?)

Understanding the post-harvest activities of the fishers

6. What boat do you use to fish? And is there a name for your boat?
   Watter boot gebruik jy om te vis? En is daar n naam vir jou boot?

7. What is the history of the boat that you use? And is there a specific significance to the name of your boat?
   Wat is die geskeidenis van die boot wat jy gebruik? En is daar n spesifike betekenis van die naam van jou boot?

8. What do you do with the fish once it is caught on the boat?
   Wat doen julle met die vis so dra dit in die boot is?

9. How do you decide what to do with the fish once it is landed?
   Hoe besluit julle wat julle met die vis gaan doen as jy terug kom?

10. What portion of the fish caught by members of this household, is eaten in this household?
    Hoeveel van jou vangs eet julle as n huishouding?

11. How do you preserve the quality of the fish you catch?
    Hoe hou julle die vis vars? (of Hoe behou julle julle vis?)

12. How much of the fish caught by members of this household is made into bokkoms?
    Hoeveel van jou vangs word in bokkoms gemaak?

Understanding the financial dynamics of the fishery

13. Do you sell the fish that you catch? If so, to whom?
    Verkoop jy die vis wat jy nie gebruik nie? En as verkoop, aan wie verkoop jy?

14. How are your relationships with the people that come to buy your fish?
    Hoe is jou verhoudings met die mense aan wie jy verkoop?

15. How do you physically exchange the fish with the buyers? For example, do they drive to you?
    Hoe kry jy jou vis by jou kopers?

16. Would you like to sell more of your fish? (Are there enough buyers of your fish?)
    Is daar genoeg mense wat by jou koop?

17. How much do the buyers buy your fish?
    Wat is die prys van jou vis wat jy gewoontlik vang?

18. What is your desired price for the fish you sell?
    Wat is jou gewenste prys vir die vis wat jy verkoop?

Understanding the challenges of the fishery

19. What are some of the challenges to selling your fish for a good price?
    Wat keer julle om n goeie prys te kry?

20. What are some of the challenges to preserving the quality of your fish?
    Wat is julle uitdagings om die gehalte van die vis te behou? (Hoe moeilik is dit om die gehalte van die vis te behou?)

21. What ways do you think these challenges can be overcome?
    Hoe kan julle daai uitdagings/probleme oorkom?

Appendix B: Questionnaire for Potential Marketers

(English & Afrikaans)

Marketer understanding of Ebenheaser fishery and demand thereof

1. Would you consume locally caught fish?
   Sou u vis wat geplaaslik gevang is, verbruik en verkoop aan jou kliente/customers?

2. Are you familiar with the fishing community of Ebenheaser? And how so?
   Is u vertroud met Ebenheaser se visser gemeenskap? En hoe so?

Purchase and consumption of Ebenheaser fish

3. Do you already purchase Ebenheaser small-scale fisher caught fish?
   Koop jy alreeds vis wat gevang word deur die klein-skaal vissers van Ebenheaser?

   3.1. If you already purchase Ebenheaser small-scale fisher caught fish, what type of product do you purchase from them? And for how much?
   As jy reeds vis koop wat gevang word deur die klein-skaalvissers van Ebenheaser, watter tipe produk koop jy van hulle?
   3.2. How much fish do you buy from Ebenheaser small-scale fishers and how often?
   Hoeveel vis verkoop jy van Ebenhaser se klein-skaalvissers?
   3.3. What sort of product do you buy from the fishers? E.g. Dry, salted, fresh etc.?
   Watter sort produk sou u soek? Bv. Droog, gesout, vars ens.
   3.4. How do you receive the fish from the fishers?
   Hoe kry jy die vis van die Koopers?
   3.5. How are your relationship with the fishing community?
   Hoe is jou verhoudings met die visser gemeenskap?
   3.6. What challenges do you experience in purchasing Ebenheaser small-scale fisher caught fish?
   Watter uitdagings ervaar u as jy vis wat gevang word deur die klein-skaal vissers van Ebenheaser koop?
   3.7. If it were possible, what would you like to change about your purchase of Ebenhaeser small-scale fisher fish?
   As dit moontlik was, wat wil u dan verander aan die aankoop van Ebenhaeser klein-skaalvisvisser?

4. If you do *not* already buy fish from Ebenhaser's small-scale fishers, would you be interested in purchasing fish caught by the Ebenheaser small-scale fishers?
   Sou u belangstel wees in die aankoop van vis wat gevang word deur die klein-skaal vissers van Ebenheaser?

   4.1. If not, why not?
   Indien nie, waarom?
   4.2. If yes, what sort of product would you seek? E.g. Dry, salted, fresh etc.?
   Indien wel, watter sort produk sou u soek? Bv. Droog, gesout, vars ens.
   4.3. What would you pay for this product from Ebenheaser?
   Wat sal u betaal vir hierdie produk van Ebenheaser?

4.4. How much of this product would you purchase for your business?
Hoeveel van hierdie produk wou u aankoop vir jou winkel?
4.5. What would be your preferred method of receiving the fish from the fishers?
Wat wou jou voorkeur metode van viskry wees?
4.6. How much of the fish do you think would be viable for you to purchase?
Hoeveel van die vis dink jy sal haalbaar wees om aan te koop?

Concerns about the fishery and its fair worth

5. Do you have any concerns about consuming Ebenheaser small-scale fisher caught fish?
Het u enige kommer oor die verbruik/verteer van vis wat gevang word deur die klein-skaal vissers van Ebenheaser?

6. Do you think that the Ebenheaser small-scale fishers currently receive a fair price for their fish; selling on average R

7. What sort of price do you think is fair to pay for Ebenheaser small-scale fisher caught fish?
Watter soort prys dink u is billik om te betaal vir vis wat gevang word deur die klein-skaal vissers van Ebenheaser?

8. 8.1. Do you think that your customers could pay that that fair price for the fish?

8.2. Do you think that your customers could pay the average desired fish price, given by the fishers of R

9. If the Ebenheaser small-scale fishers improve their processing, cleaning and storing of the fish, so as to preserve its quality, would you increase the current price you mentioned?
As die Ebenheaser klein-skaal vissers hul verwerking, skoonmaak en opberging van die vis verbeter om die kwaliteit daarvan te behou, sou u die huidige prys wat u genome het verhoog?

Sorting out the logistics

10. Would you be willing to collect the fish from the community?
Sou u bereid wees om die vis by die gemeenskap in te samel?

11. How would you suggest the issues raised about pay, preserving of fish quality and transport among others, resolved?
Hoe sou u die kwessies rakende betaling, die behoud van visgehalte en vervoer onder andere, oplos?

Appendix C: Informed Voluntary Consent to Participate in Research Study

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Project Title: An exploration of the post-harvest activities of the Olifant's Estuary Fishery: Recommendations for beneficiation

Invitation to participate, and benefits: You are invited to participate in a research study conducted with [Ebenhaeser fishers, farmers, hotels, restaurants etc.]. The study aim is to better understand the postharvest activities of the Olifant's Estuary Small-Scale Fishery, in order to seek opportunities to add value to the product and enhance access to markets for the fishers. I believe that your experience would be a valuable source of information, and hope that by participating you may gain useful knowledge.

Procedures: During this study, you will be asked to answer questions pertaining to your experience of post-harvest activities and challenges to accessing markets for your fish if you are a fisher, or to the potential you see in purchasing Ebenhaeser fish.

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

Feedback: You will receive feedback about the results and recommendations of this research in the following manner; if you are a fisher, feedback will be given to you in a focus group at the end of the data analysis of interviews conducted and if you are an interviewee that is a potential buyer, feedback will be given to you via email of the documented results and recommendations of this research at the end of the data analysis of interviews conducted.

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

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

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

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

______________________________	______________________________	________
Name of Participant	Signature of Participant	Date
______________________________	______________________________	________
Name of Researcher	Signature of Researcher	Date