

# UNIVERSITEIT VAN PRETORIA UNIVERSITY OF PRETORIA YUNIBESITHI YA PRETORIA

# **Gordon Institute of Business Science** University of Pretoria

# Managing property rights of common-pool resources in the fishing industry, to ensure economic growth and development of the local communities through institutional models

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

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# I. Abstract

The fishing industry provides direct and indirect livelihoods for over 140 000 people in South Africa and the Department of Agriculture, Forestry and Fisheries has identified 150 fishing communities. Industrial boats employ some 200 people for every 1 000 tons of fish caught, while small-scale fishing methods employ some 2 400 people for the same amount of fish. There are various means of managing the fishing industry, which operates in a common-pool resource. Small-scale fishers, however, live in poverty. The way in which the fishing industry is currently being managed, through the individual transferable quota system, has led to further problems for the small-scale fishers and the communities in which they live.

The aim of the study is provide a solution to the question of the best way to manage the fishing industry, for the benefit of small-scale fishers, while also ensuring sustainability in the fishing industry. The research will investigate three research questions, through literature review and data gathered from interviews with small-scale fishers. The research questions will investigate whether it is economically viable for small-scale fishers to continue to fish, whether small-scale fishers want to have a self-management system and what would be the best institutional model to manage the common-pool resource.

The research findings have found that there is not one best way to manage the commonpool resource. For communities to manage the common-pool resource themselves, it is critically important that trust exists in the communities. The research has furthermore confirmed recent literature that the individual transferable quota system can lead in many instances to social problems in a community.

**Key words**: small-scale fishers; common-pool resource; individual transferable quota; community; trust



# **II.** Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Shamsiya Adams

10 November 2014

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# **Chapter 1: Introduction**

This chapter serves as an introduction to the research report. The intention of the research is briefly explained, along with the motivation for the study. The aims and objectives of the study are clarified, as well as the expected contributions to the current literature, as emphasised by the significance of the study. Lastly, a brief summary of each chapter is provided.

# 1.1. Research Title

Managing property rights of common-pool resources in the fishing industry, to ensure economic growth and the development of local communities through institutional models.

# **1.2. The Research Problem**

The aim of the study is provide a solution to the question of the best way to manage the fishing industry, for the benefit of small-scale fishers while ensuring sustainability in the fishing industry. The problem is that various models had been used in the past but they did not lead to sustainability for the fishers. Furthermore, historically prior to 1994 only white-owned companies received quotas allowing them to fish. A solution now needs to be found by the Department of Agriculture, Forestry and Fisheries for the industry to be more representative, which includes small-scale fishers of all races and females, while managing a limited open access common-pool resource.

The fishing industry that is the subject of this research produces West Coast Rock Lobster, Snoek, Harders and Hotnops fish. In 2011, it was estimated that South Africa had 16 256 tons of West Coast Rock Lobster available, the lowest since 1990 (Blaine, 2013). The catch estimate was 2 991 tons in 2011 (Blaine, 2013). The fishing industry provide direct and indirect livelihoods for over 140 000 people in South Africa (WWF, 2011). The Department of Agriculture, Forestry and Fisheries have identified 150 fishing communities in South Africa

(South Africa. Info, 2013). Globally, 54.8 million people are engaged in capture fisheries and aquaculture, and about three times as many are involved in upstream and downstream activities (Bjorndal, Child, & Lem, 2014). Industrial boats employ some 200 people for every 1 000 tons of fish caught while small-scale fishing methods employ some 2 400 people for the same amount of fish (Bjorndal et al., 2014).

The fishing industry in South Africa is regulated by the Marine Living Resource Act, which came into being in 1998. This bill was introduced to control all aspects of the fishing industry and ensure that all citizens benefit from it in a fair and equitable manner (Republic of South Africa, 1998). The act was updated and the new bill, called the Marine Living Resource Amendment Bill 2013, came into effect on 29 October 2013. Small-scale fishers were not recognised in the Marine Living Resource Act and the purpose of the new bill is to provide a legal framework for the implementation of the small-scale fisheries sector (The Department of Agriculture, Forestry and Fisheries, 2013). The new bill does not allow for real rights to be issued. Rights granted to the fishers may not be sold, leased, donated or otherwise alienated except with the written approval from the minister (The Department of Agriculture, Forestry and Fisheries, 2013).

The fishing industry had been industrialised since the early 1900s (Isaacs, 2011). The individual transferable quota system was first introduced in 1990, through the Sea Fishery Act 12 of 1988 (Isaacs, 2011). Other models that have been used to manage the fishing industry in South Africa include community quotas, allocating quotas to individuals where individuals had to form small companies to apply for quotas and fishers applying as individuals for medium term rights and interim rights (Isaacs, 2011).

Many small-scale fishers in South Africa are unhappy with the current quota system, as they have been excluded from the allocation of quotas, while those who do not fish, or know how to fish, have been given a quota. This has resulted in many fishers livelihood being taken away from them. Furthermore, fishers are required to belong to a Co-operative and receive collective rights rather than individual rights.

Agricultural, Forestry and Fisheries' minister, Tina Joemat-Pettersson, described as "historic" a new amendment bill which will give small-scale fishers collective rights for the first time (South Africa. Info, 2013). The bill requires fishers to set up legal entities. Some people, however, questioned this, as it would mean more fishers sharing a dwindling stock of fish,

leading to increased poverty and hardship. They also said that Co-operatives did not work in the past, as they were not run by business-minded people (South Africa. Info, 2013).

The new South African bill would see more fishing rights being allocated to small-scale fishers. However, the parliamentary research unit has said that the South African fishing industry is not managed properly and warned against reducing commercial fishing companies' fishing rights, in order to increase the rights of SMME's (Vecchiatto & Blaine, 2013). The research unit warned that this would reduce jobs and increase poverty (Vecchiatto & Blaine, 2013).

The new fishing quotas were issued on 1 January 2014. Despite Minister Tina Joemat-Petersson welcoming the timely issuing of the new fishing quotas, they were set aside a few months later, due to numerous appeals against the way in which they had been issued (News 24, 2014).

In January 2014, fishers who were not granted line-fishing rights were granted interim relieve in the form of exemptions, pending an appeal process with Department of Agriculture, Forestry and Fisheries (Fin24, 2014). The Traditional Line Fish Association of South Africa saw only 115 of its members successfully acquiring the new right to fish, under the new allocation process, of the previous 303 members who were permit holders (Fin24, 2014). This resulted in the fishers threatening civil disobedience as they claimed the process was not fair and the majority of those allocated rights were new entrants (Fin24, 2014). One of the requirements to have been granted a fishing right was that fishers had to have fished for 300 days off the Cape Peninsula, since 2007, and 120 days in other areas (Fin24, 2014)

On 15 May 2014 the Fisheries' minister, Tina Joemat-Pettersson, announced that the 2013 fishing rights' allocation process and its decisions and outcomes would be set aside (News 24, 2014) The reasons given for the process being set aside were that an independent audit found that the process did not make sufficient use of legal advisors, which resulted in potential weaknesses; some essential policy criteria had not been included in the assessment processors and were inconsistently applied across all sectors.

A report by the WWF-SA has highlighted that, given the state of South Africa's fisheries resources, it is unlikely that job creation can take place in the short-term without progressive



rebuilding strategies and that the immediate goal of the fisheries management should be on job security (WWF, 2011).

# **1.3. Research Motivation**

The research is necessary in order to find a solution as to how best to manage common-pool resources in the fishing industry, for the benefit of small-scale fishers. Small – scale fishers live in poverty and do not have the financial means and assets to compete with large companies. The fishing quotas given are often not enough for small-scale fishers to make a living from them.

In designing management plans and achieving long-term sustainability it is fundamental to understand the fishers behaviour, in respect of how decisions are made, that are related to what and how to fish and when and why to fish (Lopes & Begossi, 2011). The fish stocks are currently under threat, with many fish listed as endangered. It is therefore important that the models used to manage the small-scale fishing industry take into account conservation of fish stock. It is also important to evaluate local decision-making, as this is likely to improve understanding of conservation issues concerning the small-scale fishers (Lopes & Begossi, 2011).

Elinor Ostrom has suggested that common-pool resources can be best managed by communities themselves. Research specifically on the small-scale fishing industry needs to be extended, as can be seen in Canada and the Turtle Island of The Philippines, where government interventions lead to tragedy (Ostrom, 2008). However, in New Zealand and Iceland a successful quota system is being used to manage the fishing industry (Ostrom, 2008).

In South Africa, the new bill requires small-scale fishers to form legal entities. This has however failed in the past, as it was not run by business minded-people (South Africa. Info, 2013). It also failed because the fishers were not the ones who benefitted from the proceeds. They remained in poverty as a top-down approach was followed (Isaacs, 2011).

The problem of marine fisheries has been pin-pointed by some as the failure of the fisheries' management, which has led to the current crisis (Beddington, Agnew, & Clark, 2007). Small-scale fishers and local fishers end up being the losers, as they do not have the means to compete with the big fishing companies, or the resources to move into other fields to earn an income (Robinson, Albers, & Kirama, 2014).

Concerning issues of development, it is necessary for institutions to create public debate and facilitate the collective decision-making process (Castellano & García-Quero, 2012). On the relationship between institutions and development, there are disagreements about the nature of institutions, institutional change and strategies of development (Castellano & García-Quero, 2012).

# 1.4. Research Aims and the Objectives of the Study

The aim of the study is provide a solution as to the best way of managing the fishing industry, for the benefit of the small-scale fishers while ensuring sustainability in the fishing industry. In this report it is investigated whether the industry for small-scale fishers is best managed by means of community management, co-management between small-scale fishers and government institutions, or whether it is best that each fisher be given his own quota and the industry be managed by the government institution.

The research will also look at whether it is economically viable for small-scale fishers to continue to fish. The research would also look at what is most equitable for the small-scale fishers. Can the small-scale fishers survive on the quotas given? The quotas given were collective quotas, but would the collective catch be sufficient for each fisher to be able to survive and make a livelihood from fishing?

Furthermore, the research will look at whether small-scale fishers would be able to manage the common-pool resource themselves rather than be managed by the government. The research will also look at the fishers' willingness to manage the common-pool resource themselves. The research will also take into account the social aspects that currently exist in the community.



## 1.5. The Scope of the Research

The research focuses on small-scale fishers who have received quotas and those who have not been granted quotas, but have been fishing for a long time. The research also looks at the income of the fishers and their fishing operations. Their views on how they believe the industry should be managed will be investigated. The research will also gather the views of large companies as to how they believe the industry should be managed. The research will take into account information provided by the Department of Agriculture, Forestry and Fisheries as to how the quota system was supposed to work.

# **1.6. Key Concepts Defined**

- **Common-pool resource:** A resource that is shared and is sufficiently large, so that it is difficult to define recognised users and exclude other users.
- **Tragedy of the commons**: This occurs where each person using a common resource endlessly increases what he takes out; from a resource that has limits; leading to the destruction of the common resource.
- **Small-Scale Fishers:** They are fishers who fish near-shore and harvest a variety of fish.
- Individual transferable quota: It is a quota given to one person, which can be transferred to another person for that person's use.
- **Total allowable catch:** Total amount of fish that is allowed to be harvested in any one year.

# **1.7. Outline of Research Report**

#### 1.7.1. Chapter 1: Introduction

This chapter outlines the aim of the research and the rationale of the research project. In conjunction with this, the research objectives, motivations and the scope of the study are emphasised. These aspects form the basis of the research study.



#### 1.7.2. Chapter 2: Literature Review

In Chapter 2, a detailed review of current literature is undertaken. The background to what a common-pool resource is and common-pool resource traps are presented; followed by institutional models to manage the resource in conjunction with literature on the alternative method of managing the common-pool resource, which is community management. The literature is further followed by current and past literature on the small-scale fishing industry.

#### 1.7.3. Chapter 3: Research Question

The research questions are outlined in this chapter, relating to the objectives and aims outlined in Chapter 1.

#### 1.7.4. Chapter 4: Research Design

The research design of the study is described in this chapter. The nature and research approach of the study is described, followed by the relevance of the population and sampling method and size. The data collection process is then categorised, followed by a discussion of the procedure that was followed, in order to analyse the data. Lastly, the validity and reliability, the research limitations and ethics of the study are noted.

#### 1.7.5. Chapter 5: Results

Chapter 5 presents the findings of the interviews that was conducted and described in Chapter 4.

#### 1.7.6. Chapter 6: Discussion of Results

In Chapter 6, the results explained in Chapter 5 are discussed. The results discussed take into account the literature review in Chapter 2 and the aims of the research highlighted in Chapter 1.

#### 1.7.7. Chapter 7: Summary and Recommendations

Finally, in Chapter 7, a summary of the research findings are presented, in addition to some suggestions for further research and the implications for practitioners.



# 1.8. Conclusion

In this chapter the research problem was briefly described, clarified by the resulting motivation of the study. The research aims and objectives were identified followed by the scope and pertinent concepts that were also defined. Each chapter was then briefly described to note the flow of the study. The next chapter provides the relevant literature base, pertaining to the research problem.



# **Chapter 2: Literature Review**

The following chapter outlines the relevant literature regarding the research report. The various management models used to manage the fishing industry are discussed, followed by their importance to engaging communities. The report continues with a discussion around the traps of common-pool resources. It discusses the need for alternate incomes and the help that institutions are required to provide fishers with, in order for them to migrate to alternative income sources, as well as incentives that need to be provided.

# 2.1. Managing the Fishing Industry

The fishing industry is a common-pool resource and many fish stocks have been depleted due to overfishing (WWF, 2011). In 1982, the United Nations established exclusive economic zones extending 200 nautical miles along the oceanic borders of coastal states and these areas no longer form part of international waters (Ostrom, 2008). The exclusive economic zones give powers to coastal states to manage resources within these areas to ensure that they are not endangered by overexploitation (Ostrom, 2008). Fishing has the problem of the *tragedy of the commons*.

The fishing industry is managed with the Total Allowable Catch (TAC), which is a limit set on how much fish can be harvested in a year (Branch, 2009). The TAC is allocated to fishers via fishing rights which are either community established or government controlled. A problem with the TAC is that it may be exceeded under any management system if there is not adequate enforcement (Branch, 2009).

In South Africa, fishers have to apply for quotas in order to harvest fish. Small-scale fishers receive collective quotas so that they may harvest fish. Historically, on the West Coast of South Africa, the fishing territories were managed in the interest of the community and not the resource, as it was regarded as inexhaustible and thus relentlessly exploited to sustain the immediate subsistence needs of the community and the profits of the patrons (Van Sittert, 2003).

In Canada, the Canadian government used a model of stock regeneration for Northern Cod that scientists later determined was flawed and highly aggregated, with incomplete data being used in deciding on quotas (Ostrom, 2008). The local fishers in Newfoundland feared that a collapse was near, but the Canadian DFO assured everyone that Cod fishing was recuperating from an earlier excessive harvest. In 1992, the Canadian DFO issued a guiding memorandum to all those fishing for Northern Cod in Canadian waters (Ostrom, 2008). The tragedy here is that local fishers, who had established local rules before the government's intervention and were the backbone of local economies, paid the cost of the collapse of the fishing industry (Ostrom, 2008).

In the Turtle Island of The Philippines, the community had a very successful local system which evolved over a decade and saw the percentage of eggs conserved steadily rise from the mid -1980s to the 1990s, without major conflict between participants (Ostrom, 2008). The tragedy here is that the national officials did not recognise local rules and passed the Wildlife Resources Conservation and Protection Act of 2001, which prohibited hunting of threatened wildlife and banned the collection of marine turtle eggs. This lead to the conservation of turtle eggs ceasing and the depletion of turtle eggs proceeded at an alarming rate, with egg conservation dropping from 80% to 40% in one year (Ostrom, 2008).

Due to the depletion of fishing stocks and lower harvesting each year, it is important for governments to implement institutions to manage this common-pool resource, to reverse the damage already done and prevent a complete tragedy. The question is, what type of institution will work best and how will it benefit small-scale fishers who do not have the means to compete with big fishing companies?

# 2.2. Common-Pool Resources

Common-pool resources are resources that are shared and that are sufficiently large, so that it is difficult, but not impossible, to define recognised users and exclude other users (Ostrom, 2008). The use of common-pool resources by one person subtracts the benefits that others might enjoy (Ostrom, 2008). As stated by Ostrom "effective monitoring by officials and users is an essential ingredient of sustainable common-pool resource institutions" (Ostrom, 2008, p.17).

When multiple appropriators are dependent on a given common-pool resource as a source of economic activity, they are jointly affected by almost everything they do (Ostrom, 2011). The basic problem of common-pool resource is organising its use and involves problems of collective action to avoid free-riding (Dorj, 2013; Ostrom, 2011). A significant factor in the resource use across communities is the in-and-out population migration of people (Dorj, 2013).

As the common-pool resource is an open access resource, restricting access to the resource and ensuring sustainability is a major problem. The common-pool resources can be managed by a range of institutional arrangements, which include governmental, private or community ownership (Ostrom, 2008).

# 2.3. Common- Pool Resource Traps

There are two common-pool resource traps, namely the tragedy of the commons and the gilded trap. Both of these see a decline in the stock levels in the common-pool resource, which has social and economic effects on the communities that rely on them.

### 2.3.1. Tragedy of the Commons

The tragedy of the commons is where each person using a common resource endlessly increases what he takes out from a resource that has limits. In the example given by Hardin, he demonstrated that where herdsmen add one cow after another to a common pasture field, because the reward he receives is greater than the negative impact of adding more cattle, the overgrazing is shared amongst all the herdsmen (Hardin, 1968).

The tragedy lies in the fact that each person pursues his own self- interest in the use of the commons (Hardin, 1968). The individual benefits, while the society as a whole suffers (Hardin, 1968). This eventually leads to the destruction of the commons. In the fishing industry, overfishing has become a problem with numerous species on the endangered list of fish. This is due to each fisher fishing to maximise his catch, without allowing for the stock to recover. Some of the endangered species which can be found on the red list are East Coast Rock Lobster, Natal Stumpnose, and West Coast Steenbras (Barendse, 2005). The

red list is fish that are now illegal to buy or sell in South Africa due to sustainability pressures (Barendse, 2005).

Examples of where the tragedy of the commons has occurred, due to mismanagement or incorrect management rules being implemented, are to be found in Canada and the Turtle Island of The Philippines (Ostrom, 2008). In some regions, like in Lake Tana, where there is decline in fish stock, fishers have demonstrated that they want more sustainable harvest than maximising their catch in the short term (Agimass & Mekonnen, 2011).

#### 2.3.2. The Gilded Trap

The gilded trap is where social drivers increase the value of natural resources, as the ecological state moves closer to the tipping point (Steneck, Hughes, Cinner, Adger, Arnold, Boudreau, Brown, Folke, Gunderson, Olsson, Scheffer, Stephenson, Walker, Wilson & Worms, 2011). The greatest concern when it comes to gilded traps is the precipitous decline, without warning, of a species that is at the greatest risk (Steneck et al., 2011).

To prevent the gilded trap occurring, it requires recognition that increasing reliance on a few high-value species increases the risks and consequences of precipitous declines in those species (Steneck et al., 2011).

# 2.4. Small-Scale Fishers

The Food and Agriculture Organisation of the United Nations (FAO) has found that smallscale fishers are receiving the least economic benefits in terms of money for their products, relative to other players in the value chain (Bjorndal et al., 2014). Small-scale fishers usually fish inshore and make use of small boats, using hook and line and trap gear to fish (Wilson, Kay, Colgate, Qi, & Lenihan, 2012).

One of the policy recommendations is that there should be increased governmental, NGO and private-sector support, which is a prerequisite for the small-scale fisheries and aquaculture sector to achieve more equitable distribution of benefits. The focus should be on technical training, infrastructure needs, finance and research and development (Bjorndal et

al., 2014). The FAO also found that there was a need for storage facilities in order to prevent the small-scale fishers from selling their products in an unfavourable market, allowing them to keep their products until conditions became more favourable (Bjorndal et al., 2014).

Research conducted by Leach found that entitlement failure frequently results less from people's lack of institutionally-grounded claims than their incapacity to make claims against more powerful actors in the context of resource struggles (Leach, Mearns, & Scoones, 1999).

# 2.5. Co-Management of the Fishing Industry

The main purpose of co-management institutions was to protect the resources and pass monitoring and surveillance responsibilities to the fishing communities (Isaacs, 2012). It is also claimed that the approach of co-management delivers greater equity among users (Van Sittert, 2003). Co-management involves a decentralised management system, where responsibilities move from the national fisheries departments to newly formed local institutions, which promote user rights (Isaacs, 2012). It describes power and responsibility-sharing agreements that are made between government and user groups (Schreiber, 2001). A co-management system also calls for a system of interactive governance and cooperative democracy, whether through direct participation or through representation at levels that transcend local community boundaries (Van Sittert, 2003).

Historically, co-management existed under a weak pre-scientific state (Van Sittert, 2003). South Africa is, however, the complete antithesis, with a dedicated marine bureaucracy, research and enforcement capability backed-up by the police and the military (Van Sittert, 2003). Research in the social sciences has called into question the traditional role of government as a manager, and brings to the forefront the role of local institutions in protecting ecosystems and local access privileges (Schreiber, 2001).

Advocates for a co-management system give two reasons for the system: the crisis in the fisheries and democracy. Van Sittert noted that neither is a reason for co-management in South Africa, as the crisis is at least three decades old and has been effectively managed, up to the present (Van Sittert, 2003). Schreiber however argues that the real crisis in

fisheries management is not the over-exploitation of many species and areas, but the desperation of fishing-dependent people and communities in the face of this lack of control over their livelihood (Schreiber, 2001).

There is however two types of fish; those that migrate and those that stay stationary in an area. Co-management systems may be able to work well for the fish that remain stationary in certain areas but it has been criticised for its inability to monitor the stock levels of migrating fish (Schreiber, 2001).

# 2.6. Community Management

A community management system is where the community manages the common-pool resource without interference from government.

In the research done of the Lobster fishing industry in Maine, it can be seen that local management and conservation can be effective at relative spatial scales (Steneck et al., 2011). When there is no community management, social dilemmas occur. Social dilemmas are group interactions in which an individual maximises his own payoff, when he does not cooperate; but attaining the social optimum requires cooperation (Stoop, Noussair, & Van Soest, 2012).

Community-based management goes further than consultation, in that it can ensure the survival of small, rural fishing communities, the independent fishers, a fishing lifestyle, and provide opportunities for meaningful stewardship of fish resources (Schreiber, 2001).

An approach to the problem of loss of fisheries-related benefits to coastal communities is the establishment of community development quotas. Under this system, government management agencies transfer quotas to community management boards, which consist of representatives from geographically-defined communities (Schreiber, 2001).

Small-scale fishers and fishing communities around the world have expressed outrage at the government-imposed fishing regulations, which they claim take away local access and place it in the hands of large-scale, urban-based fishers (Schreiber, 2001).

Successful self-governing common-pool resources have the following design principles: (Ostrom, 2011)

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- 1. Clearly defined boundaries Individuals who have the right to withdraw resource units for the common-pool resource must be clearly defined, as must the boundaries of the common-pool resource.
- Congruence between appropriation and provision rules and local conditions. Appropriation rules restricting time, place technology, and quantity of the resource units are related to local conditions and to the provision rules requiring labour, material, and money.
- 3. Collective-choice arrangements. Most individuals affected by the operational rules can participate in modifying the operational rules.
- 4. Monitoring. Monitors who actively audit the common-pool resource conditions and appropriator behaviour are accountable to the appropriators or are the appropriators.
- 5. Graduated sanctions. Appropriators who violate operational rules are likely to be assigned graduated sanctions by other appropriators.
- 6. Conflict resolution mechanism. Appropriators and their officials have rapid access to lowcost arenas, to resolve conflicts among appropriators or between appropriators and officials.
- 7. Minimal recognition of rights to organise. The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.

# 2.7. Engaging Communities

There is a growing awareness that local knowledge needs to be utilised to manage smallscale fisheries (Wilson et al., 2012). Communication plays a key role in community engagement by building the social capital necessary to bring groups and individuals together (Ostrom, 2011). An organisation seeking to establish a community engagement forum must first consider how it can develop the social capital to underpin it, which will be dependent upon the existence of shared norms, patterns of reciprocity and trust (Willis, 2012). The preferences of society, especially those of the fishers also need to be taken into consideration when implementing the fishery regulations and investments in sustainable utilisation of resources (Agimass & Mekonnen, 2011).

# 2.8. Trust

In order to construct the institutions required for the common-pool resource dilemmas, there must be shared norms and patterns of reciprocity, which lead to the development of social capital (Willis, 2012). Shared norms and patterns of reciprocity develop when individuals have interacted through face-to-face communication over a substantial period of time (Willis, 2012). Research conducted by Elinor Ostrom also found that in successful long sustainable self- management of the common-pool resource, extensive norms have evolved in all these settings that narrowly define "proper" behaviour (Ostrom, 2011). There also exists a reputation for keeping promises, honest dealings, and reliability amongst the community (Ostrom, 2011).

In an experimental research conducted with recreational fishers it was observed that social dilemmas trigger negative cooperation (Stoop et al., 2012). The researchers found that while cooperation can be found in naturally-occurring social dilemma situations, successful cooperation does not spontaneously arise (Stoop et al., 2012).

The ITQs have had positive economic impacts but concerns have been raised about their social impacts, especially in terms of fairness and equity, as the ITQs are usually concentrated in the hands of a few people (Branch, 2009). This could have an impact on trust in the community, as some fishers would not have received quotas and would therefore question those who had.

# 2.9. Types of Institutions

Institutions are the man-made constraints that structure political, economic and social interactions and provide the incentive structure for the economy (North, 1991). Institutions enable ordered thought, expectations, and action, by imposing form and consistency on human activities (Hodgson, 2006). Property rights are specified and enforced by political institutions and a capital market entails security of property rights over time. It will simply not evolve where political rulers can arbitrarily seize assets or radically alter their value (North, 1991).

There are two institutionalist views on the problem of development, the one being the new institutional economics (NIE) and the other being institutional political economy (IPE) (Castellano & García-Quero, 2012).

The new institutional economics (NIE) theory states that the basic functions of the state are to assure property rights, enforce compliance with contracts, reduce transaction cost, increase wealth, and encourage growth (Castellano & García-Quero, 2012).

The institutional political economy (IPE) is when central political control is weak and democratic institutions are half-formed (Castellano & García-Quero, 2012). The IPE professes that the behaviour and motivations of public figures are subject to modifications (Castellano & García-Quero, 2012)

# 2.10. Property Rights and Economic Growth

Economic governance is important because markets and economic activity and transactions cannot function well in its absence (Dixit, 2009). Economic governance is the structure and functioning of the legal and social institutions that support economic activity and economic transactions by protecting property rights, enforcing contracts and taking collective action to provide physical and organisational infrastructure (Dixit, 2009).

For economic growth to happen, property rights matter mainly in an institutional context, wherein political power is divided among a number of political actors (Justesen & Kurrild-Klitgaard, 2013). This gives the ability of governments to change existing property rights at some time in the future which makes even having strong property rights in isolation insufficient to generate economic growth (Justesen & Kurrild-Klitgaard, 2013).

Porter stated "A nation's competitiveness depends on the capacity of its industry to innovate and upgrade" (Porter, 1990, p 73). Companies that are capable of consistent innovation, pursue improvements, seek more sophisticated source of competitive advantage and overcome substantial barriers to change and innovation, are so due to four broad attributes that the nation possess, referred to as the diamond of national competitive advantage (Porter, 1990). Figure 1 below is the diamond of national competitive advantage



#### Figure 1: Determinants of national competitive advantage

North described property rights as "the rights that an individual has to undertake actions with regard to their own persons, including labour supply, and the disposition of the goods and services of the process" (as cited in Justesen & Kurrild-Klitgaard, 2013). Economic reasoning suggests that secure property rights are a necessary pre-condition for economic growth to occur, as it encourages individuals to engage in productive behaviour rather than destructive behaviour, exploitative and purely redistributive behaviour (Justesen & Kurrild-Klitgaard, 2013). Destructive behaviour occurs because individuals will fear that others will deprive them of the fruits of their activities (Dixit, 2009).

The institutional evolution has seen not only the voluntary organisation that expanded trade and made exchange more productive but also saw the state take over the protection and enforcement of property rights (North, 1991). This is because effective property rights enable economic actors to plan ahead and give them sufficient incentive to invest in capital and to save (Dixit, 2009; Justesen & Kurrild-Klitgaard, 2013).

Property rights in the fishing industry in many countries are in the form of quotas. A form of quota is an individually transferable quota as used in New Zealand and Iceland (Ostrom, 2008). An individually transferable quota is when the right holder can use the quota himself, or lease or sell it to someone else to use (Isaacs, 2011). Thus, having a fishing right allows fishers to gain access to capital which could be used to buy fishing boats and equipment.

A major cause of poor economic performance is due to the government's failure to protect property rights and violation, such as the expropriation of property without compensation (Dixit, 2009). In the fishing industry, not having the right to fish, or preventing local fishers from fishing, could lead to poaching; thus encouraging the tragedy of the commons.

In the fishing industry, a lack of any property right for many valuable commercial species in the open ocean has led to massive overfishing (Ostrom, 2008). Most of the ocean fisheries are open access and in 1982 the United Nations removed one third of the oceans from the international realm, allowing coastal states to manage their own resources (Ostrom, 2008).

A well organised rights system alters the economic incentives of fishers, who no longer compete for their catches, so that highly competitive fishing no longer takes place (Beddington et al., 2007).

In the fishing industry, many management authorities have implemented a system of total allowable catch (TAC) for the year and close the fishery when the year's cumulative catch has reached the TAC (Beddington et al., 2007). Another system that is in use is the individual transferable quotas (ITQs) system. This system allows fishers to make rational economic choices about where and when they catch fish, as well as allowing the industry to settle on a fleet capacity that optimises individual economic yield to vessels or cooperatives (Beddington et al., 2007).

# 2.11. Fishing Rights

Fishing rights is a form of property right whereby the holder of the right has a right to fish. The oceans are an open accessed common-pool resource, as they cannot be fenced off and do not belong to any specific person.

Fishing rights can take the form of individual transferable quotas (ITQ), non-transferable quotas, community development quotas or collective rights. The ITQ system is a relatively new concept in fishing management and is primarily a tool to solving the economic problems of fisheries (Branch, 2009). The ITQs are essentially a private property right with the right to harvest a given stock (McCormack, 2012).

One of the first countries to introduce the ITQ system was Iceland (Schreiber, 2001). The ITQ system has resolved the problem of fishing not happening all year round, due to the fishers racing to fish the TAC as soon as possible; as fishers are now guaranteed an annual quota (Branch, 2009).

The ITQ system has however some problems, in that it has resulted in more of the quotas being accumulated by the largest companies and small-scale fishers who cannot afford to purchase a quota of their own, must lease from quota-rich companies (Schreiber, 2001). The ITQs can be sold or leased by the ITQ holders to other fishers thereby creating further problems, whereby the fishers are not the ITQ owner and those with the ITQs do not fish (Branch, 2009; McCormack, 2012). Economic theory predicts that the lease price should approximate annual profits in excess of alternative opportunities, while the sale price is close to the present value of all future profits obtained from fishing the quota (Branch, 2009).

The reality of the ITQ system is that it has had profound implications for the social and economic life of fishing communities, in that it has cut small-scale fishers income by 40 - 50%, the income of those who cannot afford to buy an ITQ and have to lease it (Schreiber, 2001). They in turn cut the wages and shares of their crew, to make up for loss of income (Schreiber, 2001).

In South Africa, fishers are considered commercial fishers and treated as commercial fishers when they receive a quota; not a small-scale fisher even though their operations are still that of a small-scale fisher. In Guaruja, the fishers moved from subsistence fishing to commercial fishing due to economic pressure to change their lifestyle (Lopes & Begossi, 2011).

Initially the ITQs were based on past fishing history, which could result in fishers inflating their catch in order to obtain an ITQ (Branch, 2009). It also opened the door for speculative entry into the fisheries (Branch, 2009).

Many fishers over the past decades and all over the world have expressed their outrage at government-imposed fishing regulations, which they claim take away local access and place it into the hands of large-scale, urban-based fishers (Schreiber, 2001).

Countries that have successfully implemented the ITQ system are New Zealand, Australia, Iceland, Canada and Namibia. ITQ systems, however, come at a cost; as observers are required, whom are paid for by the industry (Beddington et al., 2007). This has seen Norway and New Zealand, who has one of the best run systems, have the highest cost per ship of all fishing nations (Beddington et al., 2007).

# 2.12. Stock Levels

The majority of global fish stocks lack adequate catch, survey and other biological data to calculate abundance and productivity, using conventional stock assessment methods. In developing countries, it is estimated that the fish stocks that are assessed range between 5 and 20% (Carruthersa, Puntb, Waltersa, MacCallc, McAllistera, Dick & Coped, 2014)

Establishing data –limited methods is relevant to developing countries where there is often less complete reporting of fishery data and even fewer resources allocated to analysing (Carruthers et al., 2014).

In South Africa, a move towards co-management exists, to pass the surveillance and management of the fishing stock to the fishers (Isaacs, 2012). A lack of fishing rights has however prevented this from happening (Isaacs, 2012).

There are views that the biological methods developed by marine scientists are not the best way to determine stock levels and protect the fish stock. Recognition of common-pool resources at a local level is the best way of protecting fish stocks from the unpredictability of stock assessment science and over-exploitation by large fishers (Schreiber, 2001). This is due to the emergent properties of marine ecosystems that local fishers develop over the years, which is overlooked by fisheries scientists (Schreiber, 2001).

Another method of managing fish stock levels is through marine protected areas (MPAs). The 1992 Convention for Biological Diversity set a target for 10% of the global marine area to be designated as MPAs by 2010 (McCay & Jones, 2011). Progress has been slow and consequently the deadline has been extended to 2020 (McCay & Jones, 2011). Decisions around MPAs are politically difficult, as proposals to redefine traditional fishing grounds as

MPAs affect communities already limited in resource use, by regulatory control, competition and decline in fish stocks (McCay & Jones, 2011).

In areas like Lake Tana, fishers want control during the spawning period in order to protect the stock levels and have sustainability of the fish (Agimass & Mekonnen, 2011).

Experience has shown that local communities, by structuring the fisheries around social concerns, are able to efficiently and successfully provide for the biological sustainability of the resource (Schreiber, 2001).

# 2.13. Use of Incentives for Small-Scale Fishers

Small scale fishers in poor countries have few alternatives to fishing. If not fishing then what would these small-scale fishers do to earn a livelihood? An option would be the use of incentives to entice the small scale fishers into accepting the marine protected areas and to fish in a sustainable way or not at all.

An incentive could have been used in the case of the Turtle Islands to have the fishers stop harvesting the turtle eggs, instead of establishing an external but unenforceable rule. As their livelihood was taken away, local rules that previously existed fell away too, and poaching ensued (Ostrom, 2008).

Robinson, Albers and Kirama argued that marine protected areas in poor countries can only contribute to sustainability if management induces changes in resource-dependent households' incentives to fish. Park managers in the Mnazi Bay Ruvuma Estuary Marine Park (MBREMP), in Tanzania, are using a combination of strategies for a sustainable harvesting regime and developing alternative or supplementary income, generating activities for people who traditionally depend on the marine resources of the park (Robinson et al., 2014). In MBREMP, the incentives offered with alternate income generating activities had little success, as the alternate income was not sufficient to offset the loss of income from fishing (Robinson et al., 2014).

2.14. Support for Small-Scale Fishers

In South Africa, the fishing industry is managed by the Department of Agriculture, Forestry and Fisheries. Some of their responsibility is to conduct community outreach programmes and events, undertake situational analysis for each respective area and establish community forums (Department of Agriculture, Forestry and Fisheries, 2014).

Some local communities, like the Gulf of Maine and Monhengan Island, provide affordable housing for fishers and maintain coastal fishing communities (Steneck et al., 2011).

# 2.15. Job Changes among Fishers

Fish stocks throughout the world are becoming depleted. In order to ensure that fishers are able to continue to make a living and not fall further into poverty, fishers must be able to move into other jobs (Isaacs, 2012; Pita, Dickey, Pierce, Mente, & Theodossiou, 2010). Livelihood is key in fishery dependent communities to cope with poverty and vulnerability (Isaacs, 2012).

In Europe, fishers have incentives to move to other jobs, in order to protect the marine areas and allow fish stocks to recover (Pita et al., 2010). The incentives take the form of compensation to fishers for the lack of full time employment and subsidies for labour diversification (Pita et al., 2010). The compensation is for fishers with at least five years' fishing experience (Pita et al., 2010).

On Monhegan Island, fishers diversify their livelihood by having a Winter-only fishing season and in Summer augment their income by exploiting the Summer tourist trade. This allows the community to better exploit local and international markets. The community can afford to do this, as they have exclusive fishing rights (Steneck et al., 2011).

# 2.16. Summary

The ocean is an open access common-pool resource and while progress has been made over the years to protect the species and protect the fishing communities along the sea, a lot still needs to be done. The UN has declared 200 nautical miles around the coastal areas as protected areas.

Different fishing management models have been used over the years to manage the industry but there is still no one model that is commonly suited to management of the industry for the small-scale fishers. Some of the models used are individually transferable quotas, nontransferable quotas, co-management system and community management system.

The individually transferable quota system, used in many parts of the world, disadvantages many small-scale fishers as the amount of fishers allowed to harvest fish reduces. This negatively impacts on the social aspects of the fishing communities and leads to mistrust in the communities.

The literature has revealed that government has to engage communities when they are setting policies, as the communities understand the environment in which the harvest for fish.


# **Chapter 3: Research Question**

The literature discussed in Chapter 2 relates to the impact of the management of the common-pool resources and how this management can lead to the tragedy of the commons, whereby the commons become extinct or unusable (Hardin, 1968).

Because of the limited resources in the form of the fish stock and the ocean being a common-pool resource, the impact of the management of the fishing industry on the lives of the small-scale fishers is looked at, as well as which institutional model will be best suited to manage the common-pool resource.

# 3.1. The Economic Viability of Fishing for the Small-Scale Fishers

The economic viability of fishing for the small-scale fishers is confirmed through the research question which follows.

#### 3.1.1. Research Question 1

#### Is it economically viable for small-scale fishers to continue to fish?

This research question answers the question as to whether small-scale fishers can make a living from their fishing activities. It also answers the question of whether the small-scale fishers would seek alternative work opportunities if it became available.

Currently the small-scale fishers live in poverty and remaining in the fishing industry may not be the answer for the fishers to move out of poverty. The common-pool resource may not be large enough to allow everyone to fish and earn a living from it.

## 3.2. Management of the Common-Pool Resource

Previous research has looked at how the fishing industry is managed in various parts of the world. Research done by Ostrom looked at the management of common-pool resource management by communities themselves. The following research questions look at how best to manage the common-pool resource for the benefit of small-scale fishers.

#### 3.2.1. Research Question 2

# Would small-scale fishers be able to manage the common-pool resource themselves, rather than the government managing it through the quota system?

Research question 2 answers the question as to whether the small-scale fishers should or should not manage the common-pool resource themselves and why. It also answers the question as to whether the small-scale fishers want to manage the common-pool resource themselves.

Small-scale fisher may want to manage the common-pool themselves but may not know how. This would make it difficult for them to manage the common-pool resource better than the government. There may also be social fundamentals that do not exist in the community which may prevent them from managing the common-pool resource.

#### 3.2.2. Research Question 3

# What institutional model will work best to manage the common-pool resource for the benefit of small-scale fishers?

Research question 3 answers the question as to what model should be implemented to manage the fishing industry, which is based in a common-pool resource for the benefit of small-scale fishers, given the fact that there are small-scale fishers who would like to continue to fish.

There are various institutional models that can be used to manage a common-pool resource and it is important to understand which model will work in which situation.



# 3.3. Summary

The research questions outlined in this chapter focus on the management of the commonpool resource and what the best way is to manage it, for the benefit of the small-scale fishers. Furthermore, as a response to existing literature, research question 2 focuses on whether small-scale fishers would be able to manage the common-pool resource themselves, as a community.



# **Chapter 4: Research Methodology**

## 4.1. The Nature of the Study

The research followed an inductive approach, as qualitative type data was collected (Saunders, 2012). The nature of the study followed the essence of exploratory research as the research sought to find new insights into a management model that will best benefit small-scale fishers, while ensuring sustainability of the fish stock (Saunders, 2012). The identification of literature on institutional models used in various parts of the world, as well as literature on the self-management of common-pool resources, formed the basis of the exploratory research, through which interviews with experts, as well as with the small-scale fishers, were conducted.

## 4.2. Population of Relevance

For the purpose of this research project, the population was identified as small-scale fishers in the Western Cape, who are considered a small-scale fisher. These fishers need not have applied for a quota. The sample included those who applied for a quota to fish and who either received a quota, or whose application for a quota was declined, as well as those who did not apply for a quota but are fishing anyway

The identification of these fishers would lead to a greater understanding as to how the smallscale fishing industry operates and the effect of having a quota has on their livelihood. Furthermore, the identification of small-scale fishers, whose application for a quota was declined, would lead to a greater understanding on the impact of not being able fish, on the livelihood of the fishers, as well as the community in which the fishers lives.



## 4.3. Sampling Method and Size

While a complete list of fishers was available, in respect of those who were successful in their application for quotas and those who were unsuccessful, contact details were however not available. The Department of Agriculture, Forestry and Fisheries do not supply contact details of fishers. Probability sampling was therefore not possible. Non-probability sampling was therefore used to make a logical generalisation of the population (Saunders, 2012).

Non-probability sampling can be conducted using a variety of sampling techniques, including quota, purposive, snowball, self-selection and convenience sampling (Saunders, 2012). Snowball sampling was identified as the most suitable method for the report. This was due to the researcher requiring to be put into contact with fishers who would be interested in participating in the research.

The sample size was 29 small-scale fishers. The 29 fishers were made up of five who received a quota, 20 who received interim relief and four who had not received any quota or interim relief. Interviews with experts at the Department of Agriculture, Forestry and Fisheries were also conducted. These interviews were conducted in order to gain an understanding of how the quota process is supposed to work and how the fishing industry is managed. Interviews with the management of large companies were not held as planned, as the researcher was unable to conduct interviews, due to time constraints

# 4.4. Data Types

For the purpose of this research, qualitative data was identified, as structured interviews were used to collect the data. Structured interviews allowed for pre-determined questions to be asked from the interviewees in the same manner. Data collected by conducting structured interviews is perceived to be associated with a high level of validity, due to the fact that each member of the sample group is asked the same questions, and therefore, there are fewer chances for the interviewee to be biased.

Furthermore, unstructured interviews with experts were conducted in order to obtain an indepth understanding of the fishing industry. Unstructured interviews are more informal and are used to explore a general topic in which the researcher is interested in more depth (Saunders & Lewis, 2012).

# 4.5. Data Collection Process

The data collection was facilitated through structured interviews and unstructured interviews. Unstructured interviews were conducted with experts from the Department of Agriculture, Forestry and Fisheries, to obtain an in-depth understanding of the fishing industry and their views on the small-scale fishing industry and how the quota system operates. Structured interviews were conducted with the small-scale fisher, in order to recommend a management model which could be used for the management of the small-scale fishing industry.

All the interviews were recorded as well as questionnaires completed. The researcher had to complete the questionnaire self as this made it easier for the interviewee to respond to questions and provide information to the researcher. The recordings were done in order to allow the researcher to refer back to it, if there were incomplete information on the completed questionnaires.

#### 4.5.1. Unstructured Interviews

Unstructured interviews were held with experts from the Department of Agriculture, Forestry and Fisheries, in order to gain an in-depth understanding of how the fishing industry operates and how the quota system works.

The information gathered was used to support the conclusions on which a management model, if any, should be used, to manage the small-scale fishing industry.



#### 4.5.2. Structured Interviews

The second method used was a structured interview based on recent literature and information obtained from the Department of Agriculture, Forestry and Fisheries. The researcher also looked at other questionnaires previously done by researchers, in order to obtain guidelines on how the guestions should be asked and what guestions to ask. A questionnaire that was looked at to help the researcher set up this research questionnaire came from the document "Determination of Fishery and Socioeconomic Effects of SIMCA and Local Fishing Communities and Evaluation of the Effects of Reserve Protection on Reef Fish Size and Abundance" (Chen, Teh, Kuek, Hoon, & Sikim, 2012). Another questionnaire was from the document "Lake Huron Fish Community Questionnaire" (Hunt, Saunders, & Browne, 2009).

The questions were structured and aimed at understanding the fishers' views as to how they feel the common-pool resource in the fishing industry should be managed. It also looked at the economic circumstances of the fishers. The questionnaire made use of both Likert-scale questions and open-ended questions.

The Likert-type scale was utilised in the questionnaire gathering data from the fishers in order to obtain demographic information from them, as well as to quantify their fishing activities and income from fishing activities.

Open-ended questions were utilised in order to prompt further information from the interviewee in order to gather in-depth information on how they feel the small-scale fisheries should be managed as well as the level of trust in the community. Open-ended questions were also utilised to gather in-depth views from the fishers about the way the quotas were granted and the process managed.

# 4.6. Data Analysis Approach

Four unstructured interviews were requested from the Department of Agriculture, Forestry and Fisheries, of which two were conducted. The two interviews that were not conducted were due to the unavailability of the experts at the department.

60 structured interviews were requested from small-scale fishers, of which 29 were conducted; due to time constraints. The request was made via the representative of the non-governmental organisation Coastal Links, in the various areas. The interviews conducted included those who had received quotas and those who had not received quotas.

#### 4.6.1. Capturing the Data

The data was captured in Excel and also analysed using this programme. Tables were set up using the pivot function in Excel, where sets of data are compared to each other, e.g. the level of education versus the fisher's chance of obtaining a quota.

Data presented in a graph format was first put into a table format, from the data captured, using the countif function in Excel, to count the number of responses per item and to present them graphically. Pie charts were then used to represent the gender spread, breakdown of the number of fishers who change jobs, fairness of the quota system response, community management of the common-pool resource, breakdown of trust, breakdown of the percentage of boat owners and the percentage of fishers who own their fishing gear. Bar graphs were used to graphically represent the income levels and number of days that fishers fish.

#### 4.6.2. Descriptive Statistic

Descriptive statistics were used to provide a general commentary regarding the outcomes of the questionnaires. These representations were concerned with explaining and summarising the data obtained. Emphasis was placed on these descriptive statistic due to sample being small.

#### 4.6.3. Qualitative Analysis

Grounded analysis was used to analyse the open-ended questions, as it provides a more open approach (Eaterby-Smith, Thorpe, & Lowe, 2002). Common themes were identified and used to analyse the data. Important comments made by the small-scale fishers were highlighted to support the results of the data.



# 4.7. Validity and Reliability

Validity is a question of how far one can be sure that a test or instrument measures the attribute that it is supposes to measure (Eaterby-Smith et al., 2002). Reliability is primary a matter of stability and whether the same outcome would be achieved if an instrument is administered to the same individual on different occasions (Eaterby-Smith et al., 2002),

The data collected were mostly done in groups of two or more. The data were also collected in different areas in order to obtain the views from fishers in different settings and comparing the results of data collected. The interviews conducted with the Saldahna Bay fishers were conducted as one large group. The interviews being done in groups could have created groupthink, which might have affected the outcome of the data collected. Groupthink describes a situation in which group pressures for conformity deter the group from critically appraising unusual, minority or unpopular views (Robbins & Judge, 2013).

# 4.8. Research Limitations

The research conducted in this project had the following limitations:

- The research was only conducted in the Western Cape and therefore a bias could have resulted, based on the answers given by the fishers in the Western Cape possibly not representing the views of all fishers.
- Insufficient response by the sample might have weakened the possible conclusion.
   Only 29 interviews were conducted with small-scale fishers.
- The fishers were Afrikaans-speaking while the interviewer was English-speaking. In some instances an interpreter had to translate and explain what was being asked.
- Some interviews were conducted in pairs or groups, as the fishers were not comfortable being interviewed on their own. This could have weakened the results, as the fishers might have been agreeing with each other, rather than be giving their own views.
- The fishers do not keep records of their catch and therefore the researcher could not confirm whether their income given matches what they are harvesting.



# 4.9. Research Ethics

The research report adhered to the ethical requirements for sound research as the below are applicable:

- The research was approved by the Ethics Committee of the Gordon Institute of Business Science.
- Full anonymity and confidentiality to all participants was guaranteed.
- No Participants were named in the research project.
- All information was provided voluntarily.
- Participation was completely voluntary and no incentives were provided to participants.

# 4.10. Summary

This chapter outlined the features of the research design applied in this report. It also explained the logic behind the selection of specific scientific tool and techniques, as well as the limitations such a design presented. The results of the research are noted in Chapter 5.



# **Chapter 5: Results**

The previous chapter outlined the manner in which the researcher aimed to analyse and explain the relationship between the various variables through specific measuring instruments and methods. Chapter 5 presents the results and the findings of the research conducted in the previous chapter.

# 5.1. Descriptive Analysis

The interviewed was conducted with 29 small-scale fishers and three staff members of Coastal Links, which represents the fishers, as well as two staff members from the Department of Agriculture, Forestry and Fisheries. The interviews with the large commercial fishing companies did not occur, due to the researcher having time constraints. The small-scale fishers came from Lambert's Bay, Langebaan and Saldhana Bay; all of which are areas on the West Coast in the Western Cape Province, in South Africa.

Some participants did not answer all questions and questions not answered were excluded from the data analysis. The questions not answered involved two participants who did not provide their education level, three participants who did not provide their income level. One participant did not provide information on how they wished to manage the common-pool resource or the level of trust in the community.

# 5.2. Participants Area of Residence

Figure 2 represents the number of residents of each area that participated in the research. The majority of fishers were from Lamberts Bay, as this is an area considered a purely fishing town. There is no other production or industrial activity in Lamberts Bay. Langebaan and Saldahna Bay have other industries which residents can engage in to earn an income. 15 participants were from Lamberts Bay and seven each from Langebaan and Saldahna Bay.

**Figure 2: Participants Area of Residence** 



# 5.3. Gender

Figure 3 illustrates that 86% of the respondents where male and 14% were female. Fishing has been traditionally a male industry with the females remaining home to tend to the children and home. Those females who did fish became fishers as teenagers, when the family's economic conditions required them to go to sea with their fathers to help harvest for fish.



Figure 3: Gender Distribution of Participants



# 5.4. Education Level amongst the Small-Scale Fishers

Two fishers who received interim relief did not indicate their education level and were excluded from Table 1 below. The results are therefore those of the 27 participants that were interviewed. Table 1 indicates the education level of the fishers and the quota status.

	Quota Status			
Education Level	Quota	Interim Relieve	None	Total
Matric	2	3	1	6
Some High School	2	11	3	16
Some Primary School	1	4		5
Total	5	18	4	27

Table 1: Education Levels and Quota Status

The majority of the fishers from the research conducted had not completed high school, with 16 fishers having some higher education and five fishers only having some primary education. No fishers had completed education higher than Matric.

	Quota Status			
Education Level	Quota	Interim Relieve	None	Total
Matric	33%	50%	17%	100%
Some High School	13%	69%	19%	100%
Some Primary School	20%	80%	0%	100%

#### Table 2: Chance of Receiving a Quota Based on Education Level

The result from those interviewed showed that having completed high school had no impact on the chances of the fishers obtaining a quota. Three out of the five fishers (60%) had not completed Matric. Table 2 indicates that 17% of fishers with Matric had not received any quota or interim relief, while 19% of those with some high school education did not receive any quota or interim relief.

# 5.5. Tenure as a Fisher

Table 3 indicates how long fishers have been fishers. The majority of fishers interviewed had been fishing for more than 30 years. Only one fisher was relatively new to the industry and had been in the fishing industry for between 6-10 years.

#### Table 3: Tenure in Fishing Industry versus Quota Status

	Quota Status							
Length in Fishing								
Industry	Quota	% Quota	Interim	% Interim	None	% None	Total	% Total
>30	3	21,43%	9	64,29%	2	14,29%	14	100,00%
26-30		0,00%	1	100,00%		0,00%	1	100,00%
21-25		0,00%	4	100,00%		0,00%	4	100,00%
16-20	2	33,33%	3	50,00%	1	16,67%	6	100,00%
11-15		0,00%	2	66,67%	1	33,33%	3	100,00%
6-10		0,00%	1	100,00%		0,00%	1	100,00%
Total	5	17,24%	20	68,97%	4	13,79%	29	100,00%

The data indicates that the longer a fisher is in the industry, the greater the chance that they would obtain some form of quota, whether an actual quota or interim relief. Amongst the fishers who were in the industry for more than 30 years, there were two fishers who did not receive a quota. They not having received a quota had to do with the way the government implements its policies and how it identifies who a fisher is.

In Lamberts Bay, the government asked the community to identify who the fishers were. The one fisher, who had been in the industry for more than 30 years that had not received a quota, believes it was because his wife owned a shop and the community therefore turning against him as he has an alternate source of income. The second person who did not receive a quota is a female and she had not received a quota as her husband received a quota. The government does not allow two related people in the same house to both have a quota.

Fishers who did not received a quota gave the following reasons for not receiving a quota *"People who do not fish and don't go out to sea received quotas"* 

"Too much people who do not know how to fish got a quota".

"Some people with quota are not using it. Government should look into those that are not using their quota and reallocate it to those without a quota".

The fishers who had been in the industry between 16-20 years, and received a quota, owned more than one boat. Only three fishers interviewed owned more than one boat. The third fisher who owned more than one boat has been in the industry more than 30 years. The results from the interviews indicate that while tenure matters, fishers also need to possess the determination to succeed. The two fishers who owned two or more boats and have been in the industry for only 16-20 years have been able to rise above many fishers who had been in the industry for longer. Education was not a factor, as the one fisher had completed Matric, while the other fisher had not done so.

# 5.6. Income Levels of Small-Scale Fishers

Figure 4 represents the income of the fishers. The majority of fishers earn on average R2 001 - R4 000 per month followed by R0 - R2 000. The fishers who earn higher than R4 000 are those who received a quota as shown in table 4.

Figure 4: Income Levels of Small-Scale Fishers



Fishers who have a quota have the potential to double their income. The fishers who are earning an income but do not hold a quota or have interim relief are fishing illegally to earn an income. Table 4 says that there are four fishers who are fishing illegally and earning an income.

Table 4: Income	Levels based	on Quota Status
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	Income Levels			
Quota Status	0-2000	2001-4000	4001-6000	Total
Quota	1	2	2	5
Interim	7	9	1	17
None	3	1		4
Total	11	12	3	26

# 5.7. Chance of Changing Jobs by the Fishers

Question 33 in the interview questionnaire attached in Appendix 1 asked fishers if they would take on a full-time job with a company. Figure 5 indicates that 55% of fishers would leave fishing and take on a full-time job if they were offered alternative work. The main reason given by the fishers for wanting to change jobs is that the size of the quota is too



small to live from. Most of the fishers who would not change jobs said this was due to age. Some fishers had already reached retirement age. Figure 6 indicates that there are 11 fishers who are older than 50 years of age.





Figure 6: Fishers Age





# 5.8. Quota Process

Figure 7 indicates the split of fishers who thought the quota system was fair that those that did not. 85% of fishers felt that the quota system was not fair. Surprisingly enough, this feedback also came from the fishers who received quotas from the Lamberts Bay area.



Figure 7: Feedback on Fairness of the Quota System

Some of the feedback given by the fishers follows:

"Presentations were done in English"

"Government did not do what they said they will do."

The fishers on the West Coast of South Africa are Afrikaans-speaking. All except one of the fishers speak Afrikaans as a first language. The one fisher who does not speak Afrikaans as a first language speaks Xhosa. The fishers also indicated that their English is not very good and the language used on the quota application was not easy to understand, as the level of the language used was beyond their understanding.

Other comments made by the fishers regarding the quota system:

"People had to get applications off the internet but they do not have computers."

"Too much people who do not know how to fish got a quota."

The fishers that found the quota system fair were from Langebaan and they either received a quota or they received interim relief and felt that having receiving at least something was better than nothing.

Most of the fishers who had not received a quota said they were not told why they were unsuccessful while others were simply told that they were new entrants.

The government considered all the small-scale fishers as new entrants if they did not have a quota before even if they had been fishing all their lives. Fishers had to show proof that they were valid fishers. Obtaining proof was not easy, as fishers did not keep any official records of their fishing activities.

One of the fishers stated, with respect to obtaining proof that he is a fisher:

"I had to obtain signatures from all previous employees. Never got it as the travel cost was high and it was too much effort".

# 5.9. Quotas received

The small-scale fishers who received a quota initially received a quota size to harvest 750kg of West Coast Rock Lobster. This has since been reduced to 606kg. The reduction is due to scientists from the Department of Agriculture, Forestry and Fisheries determining that the stock levels of the West Coast Rock Lobster is being depleted. They therefore reduced the quota size for the sustainability of the species. Some of the fishers had indicated that the scientist only came once to the area to record the level of the catch and on the results of one day only they made the decision to reduce the quota size.

Due to many of the small-scale fishers being unhappy about not receiving quotas, the government granted interim relief to some small-scale fishers so that they could still fish and earn a living. The interim relief came about due to court actions undertaken by the fishers themselves.





Figure 8 shows that 20 out of the 29 small-scale fishers interviewed received interim relief. Only five fishers interviewed had received a quota when they applied for it. Four small-scale fishers had not received any quota or interim relief, even though they have been fishers for many years

The researcher found that in terms of the interim relief, the government handled each area differently. In Lamberts Bay, small-scale fishers had to form small co-operatives in order to obtain a quota. Each person in the co-operative received a quota. In Langebaan and Saldahna Bay the community received a quota. The size and restrictions placed on the community quotas differed between Langebaan and Saldahna Bay.

In Lamberts Bay, each fisher in the co-operative interim quota consisted of a basket of fish that they could harvest. The basket is made up of 138kg of West Coast Rock Lobster per season, 420 Snoek per week, 210 Hotnots per week and 420 Mussels per week.

A fisher indicated that they prefer to work as a co-operative rather than as an individual as then they had support. The comment made follows:

"According to the application for Line-fish, the latest application is that we as small-scale fishers don't want to apply for that. Because if you are successful for Line-fish you are not allowed catch anything else. While in the policy we are talking about a basket of rights. You can to catch what-ever you can get in your waters. But on that, if you apply for crayfish you can only catch crayfish. Like in the case of the guys with the 606 kg's. You are not allowed to go for Line-fish. If the Crayfish is good in our area it took them only 5 days, 6 days to catch their quota and then they are sitting for the rest the year doing nothing. And that is the reason we do not want to go onto that sector. We prefer to be part of the small-scale policy."

Another comment made about being in a co-operative:

"If you operate alone, individual, it is easy for the sharks to target you. That is why we prefer to work communal. Then we are more protected but your rights as an individual are protected in that communal right."

In Saldanha Bay the community received 4.3 tons of West Coast Rock Lobster. This they split equally amongst the fishers that are entitled to fish. Those who were entitled to fish and share the quota were decided by government. There are currently 37 small-scale fishers who were given the right to fish in Saldanha Bay. Pensioners were not given a right to fish by the government, even if they had fished their whole lives, as the government viewed the government pension that they received as an income.

The government has however placed restrictions on the fishing activity of the fishers from Saldanha Bay. The fishers are only allowed to fish for West Coast Lobster from Sunrise until 15:00. This Rock Lobster is however a fish that is better caught at night. By the fishers being made to fish during daylight for West Coast Rock Lobster it makes harvesting for the species hard on the fishers. In their quota they further received Snoek, Yellow Tail, White Stumps and Tuna, with no restrictions to the amount that they can harvest. The Tuna is however a fish that they cannot harvest, as their boats are too small to reach the Tuna.

In Langebaan the community received a quota of 3 726kg of West Coast Rock Lobster for the season. Other fish included in the quota are 420 Snoek per week per person and 240 Hotnots fish. There are 27 small-scale fishers included in the community quota. The community is only allowed to have three boats at a time on the Lagoon to fish. They therefore have not split the actual quota but split the proceeds of the catch amongst the fishers as fish harvested per day can vary. The community also encourages the best fishers to go out to sea to fish. This means that fishers can earn an income without going out to sea to harvest fish but live off the activities of others.

# 5.10. Management of the Common-Pool Resource

Participants that were interviewed were asked if they believed that the community should manage the common-pool resource themselves, rather than through a formal quota system. 75% of participants indicated that they would like to manage the common-pool resource themselves, as is shown in Figure 9.



Figure 9: Percentage Breakdown of Community Management of CPR

Fishers indicated that they would like to be given the opportunity to manage the commonpool resource themselves. They also believed that they would be able to do a better job than

the government as they understood the area. The fishers are also aware of sustainability and would implement a rotation programme so as to protect the species.

The responses between areas had however varied as per Table 5 below. One participant in the interviews did not give his view as to how he would like the common-pool resource to be managed and was excluded from the results below.

	Responses		
Location	No	Yes	Total
Lamberts Bay		6 9	15
Langebaan		1 5	6
Saldhanha Bay		7	7
Total		7 21	28

Table 5: Breakdown per Area on Responses to Community Management of the CPR

The results from Table 5 shows that the majority of fishers from Langebaan would like to manage the common-pool resource themselves. In Lamberts Bay there was about a 50% split between those who agreed to the community managing the common-pool resource themselves and those who disagreed. Everyone in Saldanha Bay responded "Yes" to the community managing the common-pool resource themselves.

The reasons given by the fishers in Langebaan for managing the CPR themselves are the following:

- The community managed the CPR, the Lagoon, themselves, before.
- They had a system in place, referring to where they would fish and who was allowed to fish.
- They used to take the sustainability of the resource into account by rotating where they fished as well as only fishing from Sunday evening to Thursday evening, thus giving the resource a break on Fridays and Saturdays.
- The fishers used to monitor each other's fishing behaviour and initiate punishment for those who did not follow the rules.
- Punishment involved not being allowed to fish for a few days.

Reasons given by the fishers from Lamberts Bay for wanting to manage the CPR is that they believe that they can do it and would like to be given the opportunity to manage the CPR themselves. One of the fishers stated *"I feel that the fishers can manage the CPR better than the government, once they sort out their domestic issues".* 

The reason given by the fishers of Lamberts Bay not wanting a community management system was:

- They would like a co-management system.
- There is lack of trust amongst the fishers in the community.
- Some fishers have "one-track minds" and will not be able to manage the CPR.
- The loan sharks have an effect on the way the community is behaving

# 5.11. Trust

Figure 10 indicates that 57% of fishers said that there is no trust or a low level of trust in the community. 35% of fishers said that the level of trust amongst the fishers is good. The majority of fishers who said that the trust is good in the community are from Saldahna Bay. The results could have been affected by the fact that the interview in Saldahna Bay was a group interview.

Figure 10: Trust amongst Fishers



The fishers had indicated that trust existed before but the introduction of the quota system split the group. This was because some received quotas whilst others did not, even though they all fished for many years and were all except one born and raised in the area that they fished.

Some of the quotes made by the fishers regarding trust in the community are:

"Quota system split community."

"People who know nothing about fishing like doctors, lawyers and teachers got quotas"

*"Fishers are already split between the commercial and interim fishers. Commercial don't trust interim. Government caused problem"* 



# 5.12. Fishing Operations of the Small-Scale Fishers

#### 5.12.1. Fishing Boats

Only 52% of small-scale fishers who was interviewed have their own boat, as shown in Figure 11. These boats had an average size of 4.1 metres. Twelve co-operatives in the Lamberts Bay area received fishing boats from the Department of Trade and Industry, in order to help the fishers out economically. Among the fishers who own their own boats, three owned more than one fishing boat. One co-operative was given two boats by the Department of Trade and Industry.





The fishers usually go out to sea in pairs. Going as a pair helps with their safety as they can help each other if something tragic or unforeseen should happen, while they are out at sea. This is also a reason why all the fishers do not own their own boat.

The boats that the fishers use have motors, which help them get to the fishing grounds more quickly. However, the motors use 25 litres of petrol per fishing trip. This cost of the fuel is the largest expense of the fisher, due to the high petrol price.

All the fishers, except one co-operative in the Lamberts Bay area, do not own their own transport. The fishers therefore incur further cost by having to pay a person with a vehicle to transport their boats to the harbour.

A remark made by one of the fishers as to why they do not all have their own boats:

"Unfortunately, each fisher cannot have their own boat. Imagine if each person had their own boat, who would be doing the fishing? It cannot happen that each person can have a boat and will never happen."

#### 5.12.2. Fishing Gear

Figure 12 shows the breakdown of the fishers who own their own fishing gear. 86% of the fishers own their own fishing gear. The 14% who do not own their fishing gear borrow from friends when they go out to fish.



#### Figure 12: Percentage of Fishers who own their own Fishing Gear

The fishers use traditional fishing methods to catch the stock. However, each area makes use of different fishing gear, due to the type of stock that is harvested. In the Lamberts Bay the fishers use line and hook to harvest line fish and ring nets to catch West Coast Rock Lobster. Appendix 2 shows a picture of the traditional ring-nets that the fishers use to harvest for Rock Lobster. Appendix 3 shows a picture of the nets that the large commercial

fishers use to harvest for Rock Lobster. In Langebaan the fishers use nets to fish in Langebaan Lagoon and in Saldahna Bay the fishers make use of line and hooks.

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#### 5.12.3. Average Days Fishing Days

Weather conditions play a role in whether the small-scale fishers go out to sea to fish or not. The fishers do not go out to sea in bad weather and rough seas. The majority of fishers go out to sea to fish, as per Figure 13, on average between 147 and 219 days a year. The next group averages between 220 and 292 fishing days.



#### Figure 13: Number of Fishing Days

The fishers who go out more than 292 days are fishers that attempt to fish every day, even when the weather is not very favourable to fish. Those fishers are often the only ones fishing on the sea, risking their lives in order to earn an income.

One of the fishers who only fish between 0 and 73 days is a female fisher from Lamberts Bay, who only fishes during Lobster season. The other fishers who only fish between 0 to 73 days are pensioners who seldom go out to fish. They fish as they require extra income to sustain themselves. All the fishers working only 0 to 73 days hold an interim relief quota.



# 5.13. Summary

In this chapter the results were presented and discussed. A significant result of the findings was that the government implementation of the quota system led to mistrust in the community. The results also indicate that tenure matters more than education. The results also highlighted the level of the fishers dissatisfaction with the way the quota process were managed



# **Chapter 6: Discussion of Results**

This chapter discuss the results analysed in Chapter 5 in terms of the research questions and in terms of the literature review.

# 6.1. Findings - Is it economically viable for small-scale fishers to continue to fish?

In discussing the findings of Research Question One, regarding whether it is economically viable for small-scale fishers to continue to fish, the following will be looked at: income levels of small-scale fishers, the fishers changing jobs. the quotas received and the conditions for economic prosperity

#### 6.1.1. Income Levels of Small-Scale Fishers (Question 8)

• What is your monthly gross income?

R0 – R2000	R2001 – R4000	R4001 – R6000	R6001 – R8000	R8000>

Figure 4 in Chapter 5 says that the maximum amount that any fishers earned was between R4001 and R6 000. The majority of fishers earn between R2 001 and R4 000. The medium salary of South African employees in 2010 was R2 800 per month (Statistics South Africa, 2010). The small-scale fishers in 2014 have a medium salary of between R2001 –R4000. As income ranges was used, the exact medium of the income of the small-scale fishers could not be determined, but only the range. The minimum living wage in South Africa is R5 000 (Chirwa, 2014). The small-scale fishers therefore earn below the minimum living wage.

The fishers had indicated that the income that they earn is not a liveable income. Based on the living wage in South Africa, this confirms the small-scale fishers's views that the income they earn from their fishing activities is not a living wage. The small-scale fishers therefore live in poverty, resulting in them not being able to afford the necessary equipment to improve their fishing activities, like owning their own boats. As can be seen in Figure 11 in Chapter 5, only 52% of fishers own their own boat. This then impacts further on their fishing activities, together with the size of the quota received.

The Food and Agricultural Organisation of the United Nations (FAO) has found that smallscale fishers, relative to other players in the value chain, are receiving the least economic benefits in terms of money for their products (Bjorndal et al., 2014). Research conducted has also found that small-scale fishers are not able to compete with more powerful, actors in the context of the resource struggles (Leach et al., 1999). This research highlights the struggles of the small-scale fishers as can be seen from their income. The small-scale fishers with the quotas, as part of the conditions of their quota, have to sell their Lobster to the large commercial companies yet they remain in poverty.

### 6.1.2. Changing jobs by the fishers (Question 33)

• If you were offered a full time job from a large company would you accept the job offer rather than fish yourself and why?

This question was asked to gauge the likelihood of fishers accepting alternate forms of work and the reasons for this. Figure 5 in Chapter 5 says that 55% of fishers would leave fishing and take on other work, if the opportunity was there. This is due to the fishers earning below the minimum wage. Recent research has been done on the need for fishers to move into other jobs and not fall further into poverty. In coastal Brazilian villages, they face similar economic pressure to change their lifestyle and either adapt their livelihoods to other sources of income or suffer increased poverty (Isaacs, 2011). The small-scale fishers in South Africa therefore understand the need to find alternate forms of income but finding alternate forms of income is a challenge, due to the high unemployment rate in South Africa.

In Europe, fishers are incentivised to move into other jobs, in order to protect the marine areas and allow fish stocks to recover (Pita et al., 2010). The incentives take the form of compensation to fishers for the lack of full time employment and subsidies for diversification (Pita et al., 2010). In South Africa, there are no incentives provided for fishers to move to other jobs. The government has instead implemented a quota system, to provide a legal means for small-scale fishers to earn an income on the sea, but this has negatively affected the social norms of the community. The quota received is not sufficiently large in order for the small-scale fishers to earn a liveable income and therefore they continue to live in poverty.

In an area like Lamberts Bay there exists no industry. The only resource available to the fishers to earn an income is from the sea and selling the fish, without any further processing happening. The only fish processing plant that was in the area and that was owned by Oceana has been converted to produce potato French fries, as part of Oceana's social responsibility programme (Oceana Group, 2012). This was to help offset the loss of jobs when the fish processing plant closed.

The fishers have indicated that they would like to be given training on how to run a business, as they would like to own their own fish processing plant; whereby the fish can be further processed and value added to it before being sold. This will allow them to earn a higher income.

Langebaan is becoming a huge tourist attraction area as well as an ideal retirement area for retirees. The West Coast National Park also borders Langebaan, which attracts both local and foreign visitors to the area during the flower season. These developments are providing alternate sources of income for the fishers of the area, but the jobs are limited.

It is also important that the incentives given to small-scale fishers be sufficient to offset the loss of income from not fishing. In MBREMP the incentive offered for alternate income generating activities had little success, as the alternate income was not sufficient to offset the loss of income from fishing (Robinson et al., 2014). This lead to the fishers continuing to fish to earn an income.

Along the West Coast there have been no incentives or alternative jobs provided to the fishers; leaving many fishers to either become poachers or to take the government to court, in order to receive a quota.

#### 6.1.3. Quotas Received (Question 21 and 22)

Did you receive a guota?			
Did you receive a quota?	Yes	No	

• If no, did you receive interim relief?

Yes	No



A breakdown of those who received quotas can be found in Figure 8 in Chapter 5. Five small-scale fishers received a quota, 20 received interim relief and four received no quota or interim relief. On deciding on the quota size the government set a total allowable catch limit.

In terms of the quotas received, it is clear that the Government is not following their own policies and that there is lots of perceived unfairness in the system. Due to the small-scale fishers not receiving quotas, court action was taken against the Department of Agriculture, Forestry and Fisheries. The result of the court action is that the government had to draw up a small-scale policy. Due to the considerable time that it is taking the government to draw up the small-scale fishing policy, the fishers were given interim relief in order to continue to fish and earn an income. There were still many fishers left out and who did not receive an interim relief. The latest Marine Living Resource Bill was amended to include the small-scale fishers (The Department of Agriculture, Forestry and Fisheries, 2013).

#### 6.1.4. Conditions for Economic Prosperity

In order for there to be economic prosperity, government must have policy stability. In the literature on Competitive Advantage of Nations it was stated that there are four broad attributes that a nation has to have, in order to be successful. They are factor conditions, demand conditions, related and supporting industries, and firm strategy, structure and rivalry (Porter, 1990).

In assessing the results in terms of the *diamond of national competitiveness* the following was found:

Factor conditions: the small-scale fishers are skilled in fishing but do not possess
other skills that would allow them to move into other industries. Infrastructure is poor.
The government tried to help the small-scale fishers out by installing large cold
storage freezers at the harbours in order for the fishers to store their catch and sell it
when the market conditions are favourable. But after two years the containers are still
not working, as no electricity has been connected to the freezers in order for them to
work. Picture in Appendix 4. The reasons for no electricity being installed to date are
due to government departments not working together and their lack of alignment.

Also significant is the number of government departments in South Africa. To put things into perspective, the harbours are managed by the Department of Public Works, the freezers were installed by the Department of Agriculture, Forestry and Fisheries as part of the social upliftment programmes, the Department of Trade and Industry is also responsible for proving assistance to small businesses in need of financial assistance. The problem now is who is going pay for the electricity for the freezers? After two years this has not yet been resolved.

- Demand Conditions: fish and fish products in South Africa are not in huge demand, as they are becoming more expensive and scarce. The world average consumption of fish is 16kg per person annually. while in South Africa it is only 1.6kg (Ferreira, 2013). In order for there to be competitiveness, there has to be a local demand for a company's products.
- Related and Supporting Industries: assessing the small-scale fishing industry, it appears they do not have the facilities to process the fish products further and provide products for the international market. They therefore cannot compete with the large companies. Related and supporting industries are thus poor in South Africa. Small-scale fishers do not have access to marketing channels in order to themselves sell the products on a large scale.
- Firm Strategy, Structure, and Rivalry: there are currently inconsistencies in how the government implements its policies. The research findings also highlighted that the government is not following the policies and procedures that it had laid out. For example, they said that the applications for quotas must be available in the language that the people speak. However, in some areas the applications were only available in English even though the fishers are Afrikaans-speaking, thereby making it difficult for the fishers to complete the applications. The government is also treating every area differently when it comes to the small-scale fishing industry. This makes it difficult for the fishers to know what the right policy is. It also makes it difficult for all fishing communities to form one group when they have grievances that they would like to address with the government, as each area is being treated differently. The researcher found that in Lamberts Bay the fishers had to form co-operatives to receive an interim relief quota, while in Saldahna Bay and Langebaan the community received a quota. The government did not know who the small-scale fishers were



when they handed out the quotas, so a lot of "fishers", who are in fact not fishers, received quotas.

# 6.2. Findings - Would small-scale fishers be able to manage the common-pool resource themselves, rather than the government managing it through the quota system?

In answering the research question on whether small-scale fishers would be able to manage the common-pool resource themselves the researcher would discuss the following based on the findings in Chapter 5 – trust, willingness by the community to manage the CPR themselves and requirements for a successful and sustainable self-management system.

### 6.2.1. Trust (Question 37)

• What is the level of trust amongst fishers?

As per Figure 10, the majority of fishers feel that trust amongst the fishers is low or does not exist. Literature by Dixit on the issue of property rights states that destructive behaviour occurs because individuals will fear that others will deprive them of the fruits of their labours (Dixit, 2009). The researcher found that the trust that once existed amongst the small-scale fishers no longer exists.

The reason given by the fishers is that the quota system implemented by the government split the community, as some fishers received the quota and others did not. Those who received the quota feel that they are more entitled to fish than those who have not received a quota. Those who did not receive the quota are suspicious of those who did receive it and wonder why they received the quota. Comments made by some of the fishers are:

"Quota system split community".

"People who know nothing about fishing, like doctors, lawyers and teachers, got quotas"

Elinor Ostrom has found in her research that for successful sustainable self-management of the common-pool resource, extensive norms have evolved that define proper behaviour. A reputation for keeping promises, honest dealings and reliability is a valuable asset (Ostrom, 2011).

#### 6.2.2. Willingness by the Small-Scale Fishers to Manage the CPR (Question 34)

• Should local small-scale fishers manage the harvest areas themselves rather than be managed by government through the quota system?

Figure 9 says that 75% of the fishers would like to manage the common-pool resource themselves and do not want the government to manage it. The fishers who do not want to manage the common-pool resource self would like a co-management system between the government and the community.

Research done on community management of the common-pool resource has found that communities can manage the common-pool resource themselves, in some cases better than the government can. In Maine it can be seen that the local management and conservation of the Lobster fishing industry can be effective on a relative spatial scale (Steneck et al., 2011). Before implementing a co-management system or community management system, institutions first need to understand the type of fish that is being harvested in an area, as migrating fish are not easy for communities to monitor.

# 6.2.3. Requirements for a successful and sustainable self-management system

Research conducted by Ostrom found that successful and sustainable self-management systems of the common-pool resource have seven design principles, namely clearly defined boundaries, congruence between appropriation and provision rules and local conditions, collective-choice arrangements, monitoring, graduated sanctions, conflict resolution mechanism and minimal recognition of rights to organise (Ostrom, 2011).

In many parts of the world, small-scale fishers have proven that they are able to manage the stock levels successfully and in many instances better than government institutions. In Lake Tana fishers want control during the spawning period, in order to protect the stock levels and
the sustainability of the fish (Agimass & Mekonnen, 2011). Other areas that have a successful community management system are the Turtle Island of The Philippines, Newfoundland and Maine in Canada (Ostrom, 2008).

Small-scale fishers were asked how they would manage the common-pool resource themselves (Question 36) to determine if they would be able to do this and if they know what would be involved in the management.

In evaluating whether the communities along the West Coast possess those principles, information provided by the small-scale fishers in Langebaan would suggest that they did possess these principles necessary for a successful and sustainable self-management system, before the current quota system. In answering Question 36 of the questionnaire in Appendix 1, the fishers provided the information below, on how they would manage the common-pool resource. They also indicated that this is how they managed the common-pool before the quota system was introduced.

- They had a system in place as to where they would fish and who was allowed to fish.
- They used to take sustainability of the resource into account by rotating where they fish as well as only fishing from Sunday evening to Thursday evening, giving the resource a break on Fridays and Saturdays.
- The fishers use to monitor each other's fishing behaviour and punish those who do not follow the rules.
- Punishment involved not allowing those fishers to fish for a few days

Small-scale fishers therefore do possess the necessary knowledge and the communities do have the attributes of the design principles, for a successful community management system to be implemented.

## 6.3. Findings - What institutional model will work best to manage the common-pool resource for the benefit of small-scale fishers?

The preference of society, especially the small-scale fishers, needs to be taken into consideration when implementing the fishery regulations and investment on a sustainable utilisation of resources (Agimass & Mekonnen, 2011). In answering Question 3 the following would be looked at – co-management system versus a community management system and the relevance of the individual transferable quota system.

### 6.3.1. Co-Management System versus a Community Management System

Figure 9 says that 75% of the community would like to manage the common-pool resource themselves. The 25% who said "No" to a community management system would like a comanagement system. Research in the social sciences has called into question the traditional role of the government as a manager, and brings to the forefront the role of local institutions in protecting ecosystems and local access privileges (Schreiber, 2001).

A co-management system involves a decentralised system where the responsibilities move from national government departments to newly formed local institutions that use rights, as well as passing the monitoring and surveillance responsibilities to the fishing communities (Isaacs, 2012).

A community management system involves the community managing the common-pool resource without the interference of government institutions.

Before an institution decides on whether to have a co-management system or a community based system it is important to understand the following:

- The type of fish that the community harvest.
- The existence of norms that define "proper" behaviour.



#### 6.3.1.1. Type of Fish the Community Harvest

There are two types of the fish, those that migrate and those that stay stationary in an area. Co-management systems may be able to work well for the fish that remain stationary in certain areas but the system has been criticised for its inability to monitor the stock levels of migrating fish stock (Schreiber, 2001). The main fish harvested by the fishing communities that participated in this research was West Coast Rock Lobster. This is a high value fish stock. West Coast Rock Lobster is a fish that remains in a specific area. All the areas also harvest fish that is specific to that area and remain stationary, like Hotnot in Lamberts Bay and Saldahna Bay and Harders in Langebaan.

For a few weeks in a year, the small-scale fishers supplement their income with Snoek, which is a migrating fish. Their main income is however from non-migrating fish. A comanagement system would therefore work in these fishing communities as well as a community management system based on the fish they harvest.

### 6.3.1.2. The Existence of Norms that Define Proper Behaviour

In areas where there has been successful community management of the common-pool resources, there is the existence of extensive norms that have evolved over time and which define "proper" behaviour (Ostrom, 2011). In these areas, it is also important for individuals to maintain their reputations as reliable members of the community (Ostrom, 2011). In the Turtle Island of The Philippines they had a very successful local system which evolved over decades and saw the percentage of eggs conserved steadily rise from the mid-1980s to the 1990s, without major conflict between participants (Ostrom, 2008).

The community in all areas still use traditional methods of harvesting fish. Appendix 2 shows the traditional ring-nets that are that are used by the small-scale fishers to harvest Lobster. Appendix 3 shows the cages that are used by the large commercial fishers to harvest Lobster. The traditional ring-nets are more sustainable, as only Lobster can be trapped in them. The large cages used by the commercial fishing companies trap other species of fish as well. The small–scale fishers continuing to use the traditional methods of fish indicates that they take sustainability of the fish stock into account and can be relied upon to protect the stock.

In Langebaan it has always been a norm of the community to only fish from Sunday evenings to Thursday evenings. The fishers had always adhered to this. The reason given for the fishers not fishing every day is to allow the stock to recover, allow them a break and use the time that they are not fishing to fix their nets.

## 6.3.1.3. Participants Area of Residence and Area where they Fish (Question 15 and 16)

- Are you originally from this area?
- Which fishing areas do you fish in?

All fishers interviewed live and fish in the area where they were born and raised, except for one participant that was born in an area nearby to where he currently lives. Small-scale fishers therefore tend to remain in the area where they were born, building relationships with the community and sharing in similar norms.

To increase their income, some fishers move outside their immediate area of fishing. The fishers in Langebaan move their fishing activities to St Helena Bay, when Snoek fish arrives in the area. St Helena Bay is 45 kilometres away from Langebaan and fishers do not move beyond this.

The fishers in Lamberts Bay stay within the fishing areas from Elands Bay to Doring Bay, an 82 kilometre distance, with Lamberts Bay being in the middle of the two areas.

The main reason why the small-scale fishers do not move beyond this area is the cost involved in travelling. The small-scale fishers's boats are also small and can travel only limited distances. The small-scale fishers have also built relationships in the area that they fish and understand what the norms of the area are. Each area uses a different method of fishing and fishers therefore already have an established method of fishing.



### 6.3.2. Relevance of the Individual Transferable Quota System

The Department of Agriculture, Forestry and Fishing currently uses an individual transferable quota system. Before the ITQs are granted, the government first have to decide on the total allowable catch. The relevance of the ITQ system and the impact it has had on the community has to be looked at, as research has found that the ITQs have negative social impacts on the community (Schreiber, 2001).

### 6.3.1.4. Total Allowable Catch

The results found that over time the total allowable catch (TAC) for Lobster has been declining. When the TAC reduces, the quotas that the fishers hold are adjusted to fit in with the TAC. West Coast Rock Lobster is a valuable resource and the main income for the fishers who hold quotas. The fishers were initially granted 750kg of West Coast Rock Lobster. This has been reduced to 606kg for the past season. Literature by Steneck has indicated that when there is a reliance on a few high valuable resources, this increases the risk of a gilded trap occurring (Steneck et al., 2011). It is therefore important for the institutions to monitor the stock level of species and adjust the TAC accordingly.

### 6.3.1.5. The Individual Transferable Quota System

Figure 8 says that only five small-scale fishers received a quota out of the 29 interviewed. This is only 17% of small-scale fishers receiving an initial quota and means to legally earn an income.

As previously indicated, the quota system has split the community and caused members of the community in many areas not to trust one other. Previous research has found that the ITQ system has had positive economic impacts, but concerns have been raised about their social impact, especially in terms of fairness and equity, as the ITQ is usually concentrated in the hands of a few people (Branch, 2009). In South Africa the ITQ system did increase the wealth of the fishers for those who have a quota as per figure 4 in Chapter 5 but has had the negative impact noted in previous research.

Research has also found that where small-scale fishers cannot afford to buy an ITQ and have to lease it, their income has been cut by 40 -50%. This has had profound implications

for the social and economic life of the fishing communities (Schreiber, 2001). In South Africa the latest application fees for a quota was R500 per application. The small-scale fishers also had to obtain a medical certificate in order to confirm that they are in good health. Some fishers could not afford these fees and did not apply, leaving them with no income.

While there are many negatives with regard to the ITQ system, there is a place for it. The ITQ system has also been implemented successfully in many countries. Countries where the ITQ has been successfully implemented are New Zealand, Australia, Iceland, Canada and Namibia (Beddington et al., 2007). The ITQ system allows for fishing to happen all year round, as there is not a race by fishers to harvest the TAC as soon as possible (Branch, 2009).

In South Africa, the TAC in respect of the West Coast Lobster is small and in times when there is a good season, the Lobster can be caught within a few days. This leaves the smallscale fishers with nothing to do for the remainder of the season.

It is therefore important that while the ITQ system allows for fishing to occur all year round, it should be sufficiently large for this to occur.

### 6.4. Chapter Summary

In this chapter the results illustrated in Chapter 5 were discussed comprehensively, in line with the research questions outlined in Chapter 3. A summary of the results, implications for institutions and recommendations for future research are presented in the following chapter.



### **Chapter 7: Conclusion**

Chapter 7 provides a summary of the findings presented in Chapter 5 and discussed in Chapter 6. The implications of these findings for government institutions and small-scale fishers are postulated, while suggestions for future research are also offered. Finally a concluding note is presented by the researcher.

### 7.1. Summary of Findings

A significant finding was that with the government's good intentions of correcting the past equalities by allocating quotas, they caused a split in the community. As a result of the split in the community, trust no longer exists in most fishing communities as fishers have become suspicious of each other. Fishers with a quota now have an entitlement attitude, which they did not have in the past. Due to the lack of trust, while the community would like to manage the common-pool resource themselves, this would not be possible. Trust is an important component in the self-management of common-pool resources by communities.

Education had no significant influence on whether a fisher received a quota or not, but tenure plays a role in whether they receive a quota. The researcher found that while tenure played a role in a fisher receiving a quota, the fisher can succeed and investing in fishing equipment like fishing boats can help him overcome tenure and allow the fisher to obtain a quota.

### 7.1.1. Chance of Obtaining a Quota

While analysing the chance of a small-scale fisher receiving a quota, the level of education of the fisher played no significant role in obtaining a quota. Initially, the ITQs were based on past fishing history (Branch, 2009). Tenure therefore plays a role in the fisher obtaining a quota. All except one fisher was born in the area where they now reside and fish and therefore place of residence and birth place has no influence on whether a fisher receives a quota or not.

The new institutional economics (NIE) theory states that the basic functions of the state are to assure property rights, enforce compliance with contracts, reduce transaction cost, increase wealth, and encourage growth (Castellano & García-Quero, 2012). Based on the finding it appears that the South Africa Government is following the institutional political economy which professes that the behaviour and motivation of public figures are subject to modification (Castellano & García-Quero, 2012).

### 7.1.2. Economic Conditions of the Small-Scale Fishers

The income that the small-scale fishers earn is below the minimum living wage. Small-scale fishers therefore live in poverty. In order for small-scale fishers to improve their living conditions, they need to be able to move to other industries (Isaacs, 2012; Pita et al., 2010).

Currently, many small-scale fishers cannot afford to purchase their boats or to purchase vehicles for transporting the boats to the sea. It is therefore important for government to provide assistance to the small-scale fishers. Government also has to provide incentives to small-scale fishers to move into other industries. This will help the small scale-fisher move out of poverty while improving sustainability of the fish stock.

### 7.1.3. Management of the Common-Pool Resource

In implementing management models for common-pool resources it is important that the institution implementing the management model understand the area, the people, the current operations and the social fabric of the area. Due to a lack of knowledge on the operations of the community by the government, the ITQ system was implemented in South Africa. The ITQ system has resulted in a split in the fishing communities that once stood together. Trust that once existed no longer exists.

A co-management system will work best in situations where the lack of trust amongst fishers and the lack of knowledge by the government institutions on how the fishing industry needs to operate are factors. An ITQ system will also not work where the government is unable to determine who the real small-scale fishers are. Where the government cannot determine who the real small-scale fishers are, a situation will occur as in the current situation, where people who are now fishers but have never been involved in fishing have been given a quota



at the expense of the true small-scale fisher. This has left many small-scale fishers without a means to legally earn an income, resulting in many fishers becoming poachers to survive.

### 7.2. Implications for Institutions

When deciding which model to use to manage the common-pool resource, government institutions can use the model in Figure 14 to help them decide which model would be best suited for an area. Each common-pool area should be treated differently and independently of the next area, as each area will have different characteristics that define it.

Trust is a key factor in the management of common-pool resources and understanding the trust that exists in a community should be the starting point in the decision on which model should be used.



### Figure 14: Common-Pool Decision Model Tree

The type of fish that exist in an area should also be taken into account. Literature by Schreiber has highlighted that it is not easy for communities to monitor fish that migrate and therefore a co-management system will not work well. A community management will therefore also not work well, as the communities will not have the means to monitor the stock levels of migrating fish.

### 7.3. Suggestions for Further Research

The results of this research unveiled opportunities for further important research to occur. Firstly the sample should be expanded to include more fishers from each area. The sample should also be expanded to include more fishing areas. Due to the constraint of the sample size, the results of the views of the fishers could be altered if more fishers were included in the sample size.

The research should also be done over a longer period of time. This will allow the researcher to observe the fishing behaviour of the fishers more closely. It will also allow the researcher to survey the quantity of fish caught by the fishers self, as they do not keep accurate records of their catch.

A further very interesting piece of research would be for a researcher to specifically conduct research on disruptions that the new government rules or regulations have on well-functioning communities. The research conducted by the researcher of this report found that even when government's intentions were good but they lacked understanding on how the community operates can cause disruptions. A change implemented by government to the way a community operates could lead to disruption and mistrust amongst the community rather than move the community forward.

The fishers interviewed were all hardworking fishers who go out to sea to fish. There are however fishers, as stated by the small-scale fishers interviewed, that do not go out to fish. Some of the fishers who do not go to fish received boats from the government, which are now not being used. Research should be conducted on what drives small-scale fishers to go out to sea to fish, even in inclement weather, and what makes fishers not want fish when conditions are good.

Research should also be conducted on the impact that large commercial fishing companies have on the small-scale fishing industry. Institutions have to balance the industry between providing for the small-scale fishers and not running the risk of job losses in the commercial fishing sector.

### 7.4. Concluding Note

Following the research work conducted by Elinor Ostrom on managing the commons, it is important that further research be conducted. The ITQ system is the most popular management system being used to manage the fishing industry but the effect it has on communities is not well understood.

The research conducted found where a community self-management is functioning well, the introduction of quotas by the governments had a significant impact on the community. The community became split and trust that once existed no longer exists.

It therefore important that institutions before implementing changes to the operations in the fishing industry that they first engage with the community that will be affected and obtain an understanding of how the community operates. This will help them in making the right decision on which operating model will work best.

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### **Appendices**

### **Appendix 1: Questionnaire**

### **Opening:**

My name is Shamsiya Adams and I am a student at the Gordon Institute of Business Science. I am currently doing my research for my thesis in partial fulfilment for the completion of my Master of Business Administration.

I would like to ask you some questions around the management of the quota system and quota allocation given to small-scale fishers and the management of the fishing industry as well as some general demographic questions.

I would like to use the information to find the best way of managing the fishing industry for the benefit of small-scale fishers.

The interview should take approximately one hour. Are you available to respond to some questions?

### **Research Question:**

The aim of the research is to establish the following?

- 1. To establish the best model to manage the fishing industry in terms of small-scale fishers.
- 2. To establish whether small-scale fishers would want to have a community management approach of managing harvesting areas for themselves
- 3. To determine whether it is economical viable for small-scale fishers to fish for themselves or whether it is more viable for fishers to work for large companies.

### A. General demographic questions

**1.** What language do you speak?

English	Afrikaans	Xhosa	Zulu	Other
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If other: What language do you speak: \_\_\_\_\_

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2.	Are you	Male	Female

### **3.** What racial group do you belong to?

· · · · · ·		5			
White	Black	Coloured	Indian	Other	

If other: What race are you: \_\_\_\_\_

### 4. In which age bracket to you fall?

	,			
Younger than	21 – 30 years	31 – 40 years	41 -50 years	Older than 50
21 years				years

### 5. What is your highest educational level?

Post	Matric	Matric	Some High School	Some Primary	No
Qualifica	ation			School	Schooling

Yes

6. Do you financially support anyone?

No

### 7. If yes to question 6, how many people do you financially support?

1-2      3-4      5-6      7-8      9>	
--	--

### 8. What is your monthly gross income?

-	, , , , , , , , , , , , , , , , , , ,				
	R0 – R2000	R2001 – R4000	R4001 – R6000	R6001 – R8000	R8000>

### B. Questions around fishing activities.

The following questions are related to your fishing activities. The aim of these questions is to obtain a better understanding around your fishing activities and your income from fishing activities. This will help my research in determining whether the current quota system is economically viable for small-scale fishers.

9.	Do you own your own boat and fishing gear?	Yes	No

10. What gear do you use to fish? \_\_\_\_\_

11. How large is your boat in metres?

**12.** Do you owe any money to any person or financial institution on your fishing gear or

Yes No

boat?

**13.** If yes to question 12, how much do you owe?

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0 - 50 000	50 001 –	100 001 –	150 001 –	> 200 001
	100 000	150 000	200 000	

### 14. Whom do you owe the money to?

Bank	Other Financial	Government	Friends/	Other
	Institutions	Agency eg	Relatives	
		small business		
		cooperation		

### 15. Are you originally from this area? \_\_\_\_\_

### **16.** Which fishing areas do you fish in?

### **17.** How long have you been fishing?

<1 year	1 – 5	6 – 10	11 – 15	16 - 20	21 – 25	26 – 30	> 30
	years	years	years	years	years	years	years

### 18. How many days in the year do you fish?

0 -73 days	74 – 146 days	147– 219 days	220– 292 days	293– 365 days

**19.** Which fish do you harvest, and state quantities in the table below?

			r											
							Catch Si	ize per mo	onth per fi	ish stock				
Fish Stock	Tick which stock you harvest	% harvest of total catch	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hake														
Line Fish														
Mussel														
Squid														
Tuna Pole- Line														
White Mussel														
Other														
Total														



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20. How many fishers do you have on the boat?

C. Questions around the recent quota system. The following questions are to establish your views on the quota system and as well as whether you have received a quota or not.

<b>21.</b> Did you receive a quota?	Yes
22. If no, did you receive interim relieve?	Yes

Yes	No
Yes	No
Yes	No

**23.** Do you think that the quota system is fair?

24. Please elaborate on your answer in question 23.

**25.** Was the process explained properly to you and were you given sufficient time to complete the necessary documents?

Yes No

Please elaborate further on how you found the quota system application process.

If you answered yes to question 21, please answer questions 26 and 27 before proceeding to question 31.

**26.** What is your size of your quota?

**27.** Are you better off with the new quota or were you better off before? Please elaborate.



3.	What was the reason given for not receiving a quota?
).	Did you have a quota before? Yes No
).	What are you going to do to earn an income since you have not received a quota?
	Is there any further information that you can provide regarding the quota system?
-	Is there any further information that you can provide regarding the quota system?

D. Questions around alternative methods to manage the fishing industry. Another way to manage the fishing industry is through communities managing the harvest area themselves.

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**34.** Should local small-scale fishers manage the harvest areas themselves rather than be managed by government through the quota system?

Yes No

### If you answered yes to question 34, please answer questions 35 -37

- **35.** Why do you feel that small-scale fishers should manage the harvest area themselves?
- 36. How would you go about managing it?
- **37.** What is the level of trust amongst fishers?
- 38. If answered no to question 34, why not?

### Closing

I appreciate the time you took for this interview. Is there anything else that may be of value to my research that you can think of?

I should have all the information that I need. Would it be possible to have a follow-up interview if I have any more questions?

Thank you



### **Appendix 2: Fishing Gear**

The picture below is the traditional ring-nets used by the small-scale fishers to harvest

Lobster.





### **Appendix 3: Commercial Fishing Nets**

The picture is the Lobster cages used by the commercial fishing companies.





### Appendix 4: Cold Storage Freezer Installed

The picture below is of the Cold Storage Freezer installed at Lamberts Bay harbour.

