UNIVERSITY OF TROMSØ UIT

NORWEGIAN COLLEGE OF FISHERIES SCIENCE

The replacement of fishing vessels in South Africa:

A Case Study of West Coast Rock Lobster Nearshore Fishery

Luyanda Tuko

Master's Degree Thesis in International Fisheries Management
(30 credits)

May 2010

Table of contents

List of tables

List of figures

Acronyms

ANC	African National Congress
BCLME	Benguela Current Large Marine Ecosystem
CCRF	Code of Conduct for Responsible Fishing
CL	Carapace Length
CPUE	Catch Per Unit Effort
DEAT	Department of Environmental Affairs and Tourism
EEZ	Exclusive Economic Zone
FADS	Fish Aggregate Devices
FAO	Food and Agriculture Organization
FPDC	Fisheries Policy Development Committee
FEAC	Fishing Effort Advisory Committee
HDI	Historical Disadvantaged Individual
IPOA	International Plan of Action
ITQ	Individual Transferable Quota
IUU	Illegal, Unregulated and Unreported (fishing)
MCM	Marine and Coastal Management
MEY	Maximum Economic Yield
MLRA	Marine Living Resource Act
MOA	Ministry Of Agriculture
MPA	Marine Protected Area
MSY	Maximum Sustainable Yield
NPF	Northern Prawn Fishery
OMP	Operational Management Procedure
RDP	Reconstruction and Development Program

RFMO	Regional Fisheries Management Organization
SADC	Southern African Development Community
SAMSA	South African Maritime Safety Authority
SANDF	South African National Defense Force
SAPS	South African Police Services
TAC	Total Allowable Catch
TAE	Total Allowable Effort
TURF	Territorial Use Right Fisheries
UNCLOS	United Nations Law of the Sea
WCRL	West Coast Rock Lobster

Acknowledgements

It has been a long two years of studying, but now I have comprehensive understanding of fisheries management perspective. I would like thank Professor Bjørn Hersoug for his guidance, dedication and contribution in this study. I would also like to thank Marine and Coastal Management staff, resource management and large crustacean sector, Mr. Odwa Dubula and Ms. Sitembiso Sojola for their assistance during fieldwork.

I would like to also thank the NORAD for funding my studies, and special thanks to Ane-Marie Hektoen. My sincerely thanks to IFM lectures and my colleagues for support, advice especially in needy times in two year stay in Norway.

Abstract

The changing of vessels in the West Coast Rock Lobster nearshore fishery is one of the important issues which need attention within the South African fisheries management, that is, by fisheries authorities and industry (fishing right holders). This is due to the increasing problems regarding frequent vessel changes in the South African fisheries and the consequences in terms of increased fishing capacity. The thesis seeks to find major causes of vessels changes and how often the right holders change their fishing vessels. It further seeks to relate the policies of other fishing nations to gain measures to curb the problem of fishing capacity through the vessel replacement. The data were collected from primary and secondary sources and analyzed by both qualitative and quantitative methods. Various theories of capacity management were used in the study to explain the findings. The findings of this study reveal that transformation in South African fisheries has progressed, and that the fishers have shown development of their enterprise. Fishing nations like Canada and Australia have been used as cases for how to curb the problems. Some of the principles under laying their replacement policies may also be employed in the South African setting. A new and more precise replacement policy is strongly recommended for the South African WCRL fishery.

Chapter 1: Introduction

The replacement of fishing vessel may refer to different issues in the fishing fleet, which includes replacement of old vessels, buyback schemes, restructuring and renovation of the vessels. The development of vessel replacement policies will therefore differ from one country to another, depending on the specific problems the countries wish to address. Generally the replacement of fishing vessels has implications for the conservation of the fish stocks, as larger vessels have a greater capacity to catch fish. The purposes of vessel replacements in most countries is to conserve fish resources through the limitation of harvesting capacity, regulate competition between fleets and meeting national and international obligations[1]. The French replacement policy is based on maintaining the profitability from fishing activities by balancing fishing capacity, fish stocks and marketing possibilities (Merout, 1986). Vessel replacements rules can help to stabilize the fleets and ensure an appropriate number of enterprises have a chance of to take a reasonable share of the available resource.

The replacement of fishing vessels in South Africa is mainly motivated by commercial reasons. The reasons which are most likely to be mentioned by right holders include vessels sinking, technical breakdown, and bad relations between chartering parties, sea safety and investment considerations. The South African fishing industry has been going through a process of transformation in recent years allocating fishing rights to historical disadvantaged persons (HDIs). Under the Marine Living Resource Act (MLRA) transformation is a main objective to achieve equity by restructuring the fishing industry, taking into account the reallocation of some rights, reducing the quotas granted to existing companies and awarding to new entities (Branch and Clark, 2006). According to Caddy and Cochrane (2001) an examination of the replacement strategy shows that new entrants commonly enter the fishery with new vessels, which act as added capacity and furthermore the fishing intensity of these vessels is difficult to control by indirect measures. South African fisheries authorities have

[1]See http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/vessel-bateau/index-eng.htm. Accessed 20-12-2009

imposed a boat license limitation programme for new entrants, in order not to bring excess capacity into the fisheries.

Problem statement

The change of fishing vessels during a season in South Africa has been a problem in most fishing sectors. Quota holders across the fisheries change vessel every now and again, and some change more than others. Regulators administer and record vessel changes. The west coast rock lobster sector has been identified as one of the fisheries which receive a lot of applications for the changing of vessels originally assigned with specific quota. South Africa has no policy guidelines for the replacement of fishing vessel, and there is a lack of detailed guidelines on vessel changes. The sector policies only state that replacement vessels should be suitable for the fishery in each sector. The problem is not only the issue of administration, which in itself is becoming a large burden, but it also relates to the catch capacity within the fisheries, and hence, to the biological economic and social goals set for the sector.

Aims of the study

The study aims at understanding the reasons why fishing right holders in the West Coast Rock Lobster (WCRL) fisheries change the vessels that they originally contracted for catching their quotas, and how often they change within a season. Understanding these issues may give a base for developing a more efficient vessel replacement policy in the South African fisheries. Such policies could also be informed by what other fishing nations are doing in this respect. Vessel replacement policies are important both in terms of sustainable fisheries management (obtaining biological goals) but also in terms of achieving economic and social goals, such as transformation, that is, to obtain greater equality in terms of ownership.

Research questions

The current study aims to find possible ways to develop a vessel replacement policy for the South African fishing sector. In achieving the objectives the study tries to answer the following research questions:

1. Why is there a need for a replacement policy?
   a) control issues,
   b) capacity issues
   c) ownership issues.
2. How often do the right holders change fishing vessels?
3. What are the reasons for changing of vessels?
4. How can the South African fisheries sector develop a policy more efficient than the present one?
5. What can South Africa learn from the other fishing nations with specific vessel replacement policies?

Research methods

This study relies on both primary and secondary data. The primary data consists of vessel change approvals by the Marine and Coastal Management (MCM) branch of Department of Environment Affairs and Tourism (DEAT) for the South African fishing. The secondary data comprise catch data for all right holders in a particular fishery for a particular season and vessels used for that season. The study has used both quantitative and qualitative data collection methods.

Organization of the study

The study has been structured into seven chapters. It begins with an introduction which is the first chapter, describing the replacement of fishing vessel in South Africa. It also addresses the problems underpinning vessel changes and the research questions. The aims of the study are mentioned in this chapter together with the possible methods to analyze the data. The second chapter deals with the background of the WCRL fishery, which is the case in this study. The third chapter focuses on the theoretical aspects of capacity management. In the fourth chapter the work focuses on the research methods of the study and chapter five focuses on analysis and findings of the study. In chapters six, the study deals with the fishing replacement guidelines in other fishing nations and in chapter seven focuses on the conclusions of the study.

Chapter 2: Historical background of the West Coast Rock Lobster nearshore fishery

Introduction

South Africa has coastline of 3000 km long, which extends from Orange River in the west, on the border of Namibia to Ponta do Oura in the east, adjacent of Mozambique (MCM, 1997; FAO, 2005). It has as an Exclusive Economic Zone (EEZ) of 200 nm, containing a huge variety of fish species (Martin and Nielsen, undated).

The South African fisheries contain four demersal fisheries which are a deep-sea hake trawl fishery, a long-line hake fishery, a hand-line hake fishery and an inshore-trawl fishery. The demersal fishery is the most valuable fishery in commercial terms. It dominates South African fisheries and accounts approximately 45 % of all landings, and it is dominated by the deep-sea trawl hake fishery (FAO, 2005; Martin and Nielsen, undated). In this fishery there are two species which are harvested, deep-water hake *Merluccius paradoxus* and shallow-water hake *Merluccius capensis*. The demersal fishery was unregulated for a longtime, Total Allowable Catch (TAC) and Individual Quotas were introduced in 1978/79 respectively. The TAC has fluctuated between 140,000 tons and 133,000 tons from 1979 to 2004 (MCM, 2005).

According to Martin and Nielsen (undated) the second largest fishery is the pelagic purse seine fishery (anchovy and pilchard), and the pelagic sector is the largest in terms of volume landed (FAO, 2005). The landings of the pelagic fishery are approximately 500,000 tons including the red eye herring as the bycatch (BCLME, 2005). In terms of the value the pelagic fishery constitute 25 % to the total of the South African fisheries, and landings are processed for fish meal, fish oil and a certain percentage is canned for human consumption (Martin and Nielsen, undated).

The rock lobster fishery is based on two species; west coast rock lobster (*Jasus lalandii*) and south coast rock lobster (*Palinurus gilchristi*) and is the third largest in South Africa. The west coast rock lobster will be described more in detail in this chapter. The south coast rock lobster is the deep-water species caught by means of long-line of traps operated by freezer vessels. The commercial fishery for this deep-sea species has been in existence since 1974.

The TAC of 450 tons tail mass was set annually from 1984 and later increased to 475 tons (FAO, 2005). The landings of the south coast rock lobster are generally frozen at sea and repacked at shore based facilities, and the entire landing is almost exported with a approximate value of R 100 million per annum predominantly to United States of America[2].

The South African line fishery is said to be a complex sector involving many species, having major components which are commercial, semi-commercial and recreational fishery (FAO, 2001). The value of the fishery accounts for approximately 12 % of the South African fishing sector. It is a multispecies sector comprising of the following fisheries; tuna fishery targeting albacore tuna and yellow-fin tuna with catches ranging from 4,000- 6,000 tons per annum (FAO, 2005; Martin and Nielsen undated), a squid jigging fishery targeting chokka squid is regarded as the primary economic engine in the south coast, with a value R 40-R 90 million per year. The highest catch ever recorded in this fishery is approximately 12,000 tons in the season 2003/2004. Squid are frozen at sea and exported as whole to Europe[3]. The third sector in line fishery is the traditional line fishery targeting almost 200 species of marine fishes, of which 50 are commercially important. Annual catches are estimated at 16,000 tons and are consumed locally[4].

The commercial abalone fishery began in 1949 reaching up to 2,800 tons in 1965, when the fishery began to decline and quota control was imposed. The first commercial landings in 1970 were in production quota of 227 tons (Cockcroft *et al*. undated). The abalone fishery stocks have collapsed in the past years; in 2000 the TAC was set 693 tons and by the season of 2005/2006 the TAC had collapsed to less than 240 tons. The collapse is due to the unprecedented levels of illegal and unreported fishing since the 1990s[5]. The abalone is currently under severe pressure from a variety of sources which has resulted in collapse of the commercial sector and closure of recreational fishery in 2003.

The South African fisheries legislations were initiated almost eight decades ago with the Sea Fisheries Act of 1940 and the act was succeeded by new Acts in 1973 and in 1988. After the

[2] See http://www.feike.co.za/southCoastRockLobster.html: Accessed 12 January 2010.

[3] See http://www.feike.co.za/squid.html: Accessed 12 January 2010.

[4] See http://www.feike.co.za/traditionalLineFish.html: Accessed 12 January 2010.

[5] See http://www.feike.co.za/abalone.html: Accessed 12 January 2010

establishment of the Fisheries Act in 1988, the Quota Board was provisioned for its establishment in the same year and became operative in 1990 (MCM, 1997). The Quota Board initiated attempts to bring in new right holders in the fishing industry in the 1990s. The Quota Board had been established to recommend guidelines for the reallocation of fishing rights, but the board did not do any major allocation prior to the 1994 elections (Nielsen and Hara, 2006). South Africa had a lot of programs since 1994 after the elections when the African National Congress (ANC) came to power, the programs aimed at empowering groups and individuals that had been affected negatively by the apartheid (Ponte and van Sittert, 2007). A committee to discuss new fisheries policy was formed 1994, and the purpose of the Fisheries Policy Development Committee (FDCP) was to find ways to redistribute the access rights, but within the committee experts were chosen to review the access rights options. The access rights options were written with slight editing in the white paper after being submitted by the Access Right Panel of specialists (Hersoug and Isaacs, 2001). This white paper has led to the Marine Living Resource Act where DEAT had hired specialist to review the Sea Fisheries Act of 1988.

The West Coast Rock Lobster fishery

The early regulations of the fishery

The west coast rock lobster (WCRL), *Jasus lalandii* occurs at 23° S north of Walvis Bay in Namibia to 28° S East London (Brouwer, 2005; Cockcroft and Payne, 1999). The WCRL occurs about 200 m depth in cool temperate water, with temperature ranging from 10° C to 19° C, together with the closely related species of the genus *Jasus* that are found in southern hemisphere. The distribution of WCRL to far north off the Namibian coast is enabled by the Benguela upwelling system. According to Mayfield and Branch (2000) the WCRL has been slowly migrating stretching from about 150 km east of Cape Hangklip on the south west coast of South Africa to the east, and the lobsters have been migrating due to the unknown scientific phenomena[6]. The WCRL fishery is made up of two distinct sectors, the commercial and the

[6] The migration is governed by their biology and an environmental change, the movements of the west coast rock lobsters is not clearly understood. There are some possible causes for the movement, lack of oxygen which has influenced slow somatic growth.

limited commercial sectors and the recreational fishery. Approximately 80 % of the WCRL resource is located offshore, and 80 % of the TAC is allocated to the offshore fishery while 20 % is allocated to the inshore fleet.

The South African West Coast Rock Lobster has a long history of exploitation and Archeologists have found it as the component of the diet in early inhabitants on the West Coast (Melville- Smith and van Sittert, 2005). Commercial exploitation began in the late nineteenth century and expanded during the early twentieth century, and due to overfishing a minimum size limit was introduced in 1933 with a carapace length of 89mm CL (Cockcroft and Payne, 1999).

According to Marine and Coastal Management (2005), the WCRL fishery was unregulated up until 1946, when a tail mass quota was imposed to control the fishery. This tail mass quota formed a basis of the output control management system and is still employed currently in the WCRL fishery. In the northern areas there was severe decline of catches according to available data and then the minimum 89 mm CL was reduced to 76mm CL from 1959 to 1963 and then onwards raised again to 85 mm CL size limit in 1970 a measure that was applied everywhere, but in 1985 it was decreased again to 75 mm CL (Cockcroft and Payne, 1999; Melville-Smith and van Sittert, 2005).

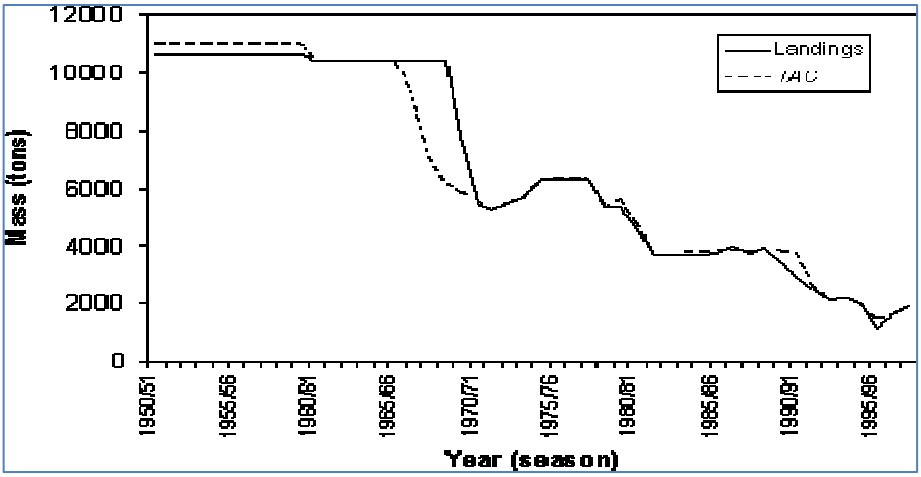

Figure 2.1: West Coast rock lobster TAC and landed catch (tons whole mass) for the period 1950/51 – 1999/2000. Source : Sauer *et al*., (2003).

According to Johnston and Butterworth (2005), between 1950 and 1970 the catches declined in the fishery, and then in 1979 the tail mass quota was replaced by a whole lobster quota. The whole lobster quota was managed by means of zonal TACs which were introduced in the 1980s (MCM, 2005; Johnston and Butterworth, 2005; Cockcroft and Payne, 1999). The zonal TACs were made for four fishing zones each divided in two fishing areas.

The catches increased in the 1980s, and according to Cockcroft and Payne (1999) the management was successful between 1980 and 1989, when the fishery produced stable catches. The catches decreased in 1989, and it was the rate of somatic growth which resulted in decreased recruitment (Johnston and Butterworth, 2005). In the 1991/92 season there was a temporary reduction in minimum size limit from 89 mm to 75 mm CL due to the slow growth which again resulted in poor catch rates (Johnston and Butterworth, 2005; Cockcroft and Payne, 1999). In the season 1992-1993 the initial minimum length was 80 mm CL, but it was reduced again to 75 mm CL, mainly for economic reasons. The other management measures enforced earlier included prohibition on the possession of berried females or soft-shelled lobsters, and a closed winter season and a daily bag limit for recreational fishermen (Sauer *et al.,* 2003).

The current regulations of the fishery

West Rock lobster (Offshore) full commercial fishery

Before the introduction of the lobster traps in 1960s the commercial fishery used handhauled hoopnets, which are light and easy to deploy from small boats in shallow waters (Sauer *et al.,* 2003). Initially the fishery was based on the use of handhauled baited hoopnets but increasingly traps came into use in the 1970s. Traps accounted 75 % of total catch during the season of 1996/97 (Cockcroft and Payne, 1999). The traps are made up of rectangular steel frame covered by polyethylene netting, and have a top or side entrance (Sauer *et al.*, 2003). These baited rectangular traps are deployed at depths of down to 100 m and are left overnight. The gear have selectivity device in order to minimize the catch of undersize lobsters. The traps can be modified to target specific size ranges through design and bait, while escape vents have been have introduced in traps in various sizes and shapes (Groeneveld *et al.,* 2005). According to Brouwer *et al.* (2006), the current management approach relies on traps

with large mesh size, a small size limit and deck grid sorters for limiting injuries of small sized catches. In the southern fishing zones about 90 % or more of the landings are produced from fishing with traps (Sauer *et al.,* 2003).

Management measures currently being used in the both limited commercial and full commercial fisheries

The resource is managed using the following criteria:

- Minimum size limit
- Gear restrictions
- Total Allowable Catch (TAC)
- Closed seasons and restriction on the retention of berried females and soft shelled animals
- Sub-division into management zones and Marine Protected Areas (MPAs)

Presently the minimum size limit for commercial fishers is 75 mm carapace length (CL) and for recreational fishers it is 80 mm carapace length (CL). The closed seasons vary regionally for designated zones around the coast.

The offshore vessel accepted vessel should be:

- Maximum SAMSA certified length of 30 meters and a minimum length of 8 meters.
- Equipped with functioning Vessel Monitoring System (VMS)
- Geared to fish WCRL using traps and hoopnets only
- Should not operate in another fishery

West Coast Rock Lobster (Nearshore) limited commercial fishery

The subsistence fishery has been replaced by the nearshore commercial sector in 2001, due to the high value of WCRL after reviews had recommended this fishery to be commercialized along with the traditional linefish (MCM, 2005). The transformation of the subsistence sectors

into small scale operations had been proposed in order to reduce the conflict while maximizing the economic benefits to participants.

The gear used is only hoopnets and the right holders may not move between the fishing areas. The hoopnets are used to depths of about 30 m, and the hoopnet dinghies can operate in the inshore areas by means of outboard motor or can be transported to the fishing area by a mother vessel which is motorize (MCM, 2005). The fishers historically were more or less restricted to fishing near homeport because of their equipment, but changed to more mobile gear when they became capable of catching around the coast in different locations (Sauer *et al.,* 2003). The nearshore accepted vessels should be:

- Maximum SAMSA certified length of 8 meters[7].
- Geared to fish WCRL using hoopnets only.

The recreational fishery

There are approximately 48,000 recreational permit holders and the recreational catch is usually around 300 tons per annum (MCM, 2006). During the 1980s when the stocks of the resource stabilized after the decline since 1960s, during that period permit requirements for recreational rock lobster fishing were introduced. During the 1992/93 season rock lobster and abalone recreational permits sales increased by 33 % because of the increased recreational length season, and dramatic decrease for both species in 1997/98 due to the delay placed in sales, about one third of recreational permit sales elapsed.

Recreational fishers caught lobster by means of diving without artificial diving apparatus or by ringnets from either the shore or the vessel (Brouwer, 2005). In 2002 the minister announced a fishing season for the west rock lobster starting from 15 November to 31 December, and the fishing is allowed every day of the week but from 1 January to 1 February fishing is restricted to Saturdays and Sundays. Other measures in the recreational fishery:

- Recreational permit-holders collecting west coast rock lobster may do so only between 08:00 – 16:00.

[7] The SAMSA has been in place since 1998, under the SAMSA Act of 1998.

- Bag limit: Four (4) lobsters per permit holder per day for own use.
- Minimum size: 80 mm - measured in a straight line along the middle dorsal line of the carapace, from the centre of the posterior edge of the carapace to the tip of the middle anterior spine.
- West coast rock lobster in berry or with soft shell may not be caught.
- Rock lobster for own use may only be caught by:
    - using a ring- or scoop-net from a boat not licensed to catch rock lobster commercially;
    - using a ring- or scoop-net from the sea-shore;
    - Diving from the sea-shore without the use of artificial breathing apparatus, other than a snorkel.
- Closed areas

Closed season is a helpful tool for management especially for reproductive outputs of individuals which are negatively affected by the harvesting, which often species of *Jasus lalandii* harvested undersized and breeding females (Arendse *et al.,* 2007). The closed season occurs between 1 June and 15 November, and this method reduces the effort and allows reproduction (Branch and Clarke, 2006). The St. Helena Bay area is a MPA, and west coast rock lobster exploitation in that area is prohibited (Brouwer, 2005). Gear restrictions in lobster catches and new traps with escape vents greatly reduce undersized lobster catches in commercial fishing operations (Cockcroft and Payne, 1999).

Commercial fishing zones/ areas

The South African West Coast rock lobster fishing grounds are divided into six fishing zones (Zones A to F), Zone A to Zone C each consisting of two fishing areas (Area 1 to 6), and Zone D divided to four areas (Area 7 to 10). There are also geographically separated small fishing areas which have been formed to Zone E (Area 11) and Zone F (Area 12, 13 and 14). The WCRL fishing zones serve as a measure of area restrictions, subdivisions and land based

sites. The fishing zones are divided proportionally among right holders in the form zonal allocations.

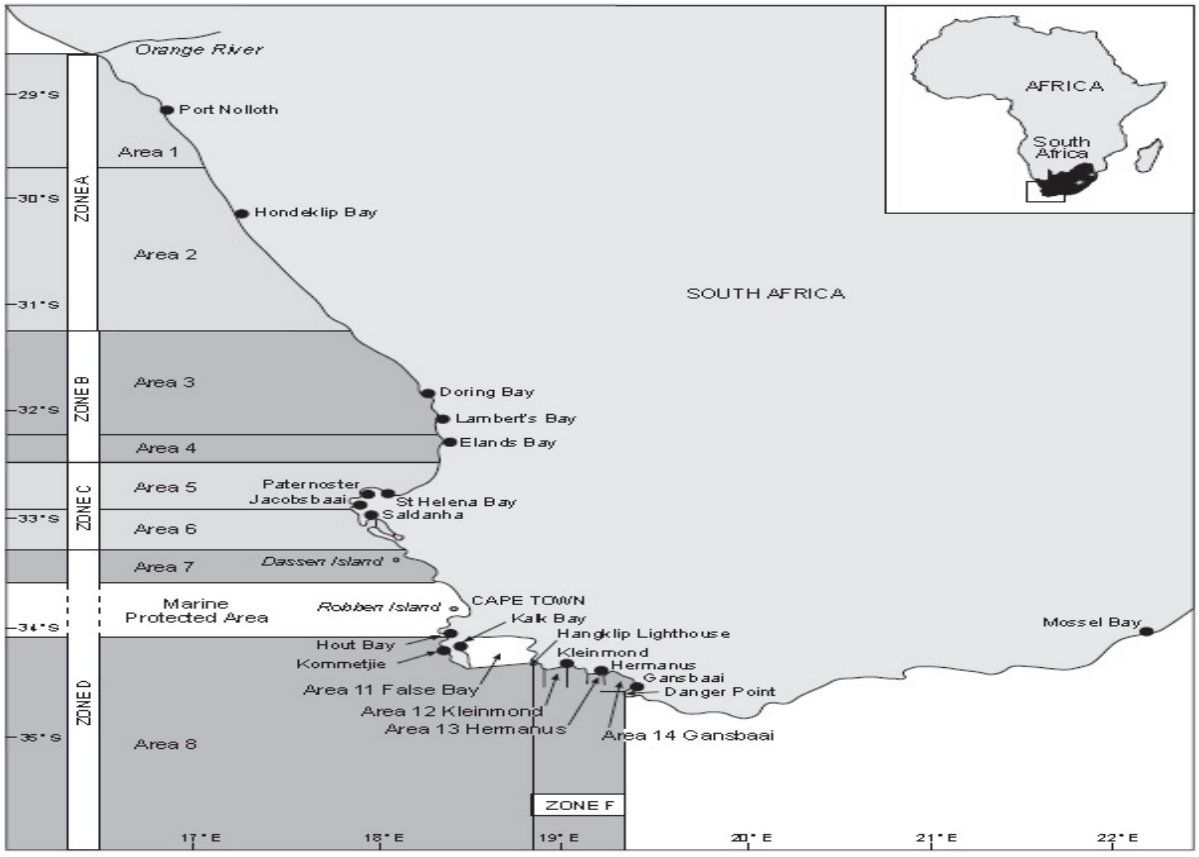

Figure 2.2: Map of the South African coast showing the fishing zones and areas of the West Coast rock lobster fishery: Source Cockcroft *et al*, 2008.

Historically, lobster fishers were more or less restricted to fishing near their homeport as a result of their rudimentary equipment. Through the development of the fishery people having more powerful boats (technological creep increase), with the changes to more mobile craft, fishers became capable of catching lobster at various locations around the coast. Today it is common for some fishers domiciled in one area to land lobsters in several other ports. This segment can also be sub-divided into different categories, according to the size and or type of vessel from which fishing operations are conducted (Sauer *et al.*, 2003).

Operational management procedures

The biomass of the resource have declined dramatically in the past years, and it was considered crucial was to develop a strategy for the rebuilding of the stock, Operational Management Procedures (OMP) were developed with the aim of providing a basis for the setting of TACs. The OMP has been put in place in 1997, in order to adjust the TAC up or down, depending on the projections of stock (Cockcroft and Payne, 1999). The OMP for the WCRL was used targeting a recovery level of 20 % by the 2006. In the WCRL, annual data from the Catch Per Unit Effort (CPUE), fisheries independent measures of relative abundance and growth rates of the males are combined into a mathematical expression to calculate the a recommended TAC (Branch and Clark, 2006). The problem with OMP for TAC recommendation is the uncertainties in future trends particularly in somatic growth and recruitment (Johnston and Butterworth, 2005). The OMP represents a robust method to maintain a reasonable chance of achieving rebuilding targets and ensure smooth fluctuations in TAC.

Current state of the fishery

According to the resource status of the WCRL in 2006, WCRL rock lobster was recovering from severely depletion which is attributed by the historic overfishing and decrease in somatic growth, the recovery is associated with the effective management using of Operational Management Procedures (OMP). The spawning stock biomass by then was at approximately 23 % of the pristine value with an exploitable biomass of 7 %. The current status of the marine resource for 2007 and 2008 states that WCRL is severely depleted with exploitable biomass of 3 % and 2,6 % and the spawning biomass of 9 % and 8 % respectively (MCM, 2006, 2007 and 2008).

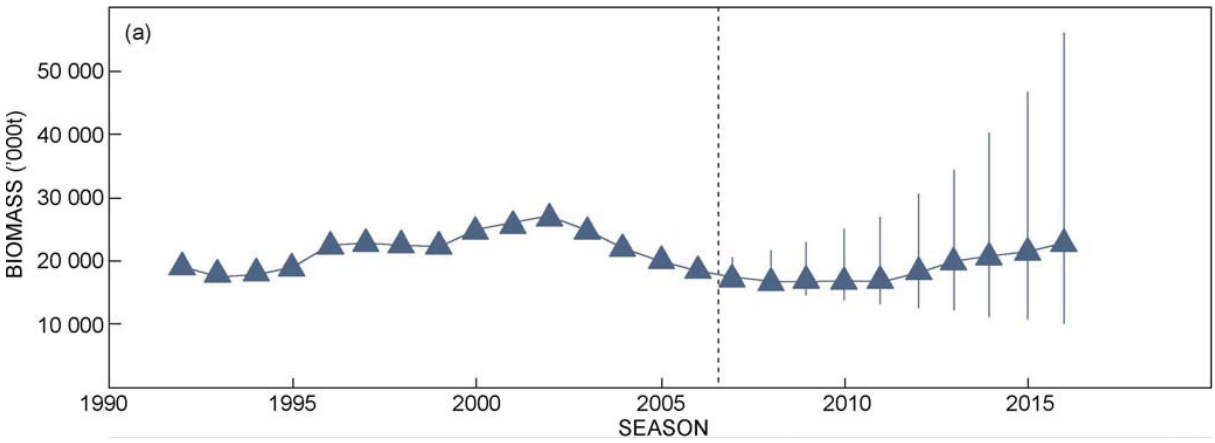

Figure 2.3: Projection under OMP-2007: The trend in male biomass above 75mm carapace length (B75+), showing the median with 5% and 95%-iles. In each plot, the vertical hashed line indicates the start of the projection period (Source Status of marine living resource, 2006-2007).

Illegal fishing

As the global fisheries consumption continues to grow, Illegal Unreported and Unregulated fishing (IUU) is the most fundamental and immediate threat to fisheries sustainability in South Africa (Feike, 2006). However it is difficult to assess extents, frequency and the impacts of the illegal activities, ten specific illegal activities threatening marine biodiversity have been identified in the South African coast (NSBA, 2004).

Table 2.1: Illegal fishing in South Africa, species targeted are generally the same as gear concerned. Source: NSBA 2004.

Fishery	**Target species**
1 Illegal demersal longlining - hake and kingklip	
2 Illegal toothfish fishing	
3 Illegal pelagic longlining	
4 Illegal linefishing	

5 Illegal FADS (fish aggregating devices)	These structures are used primarily by recreational skiboat anglers to attract species such as dorado and cobia.
6 Illegal – west coast and deep sea rock lobsters	
7 Illegal abalone poaching	
8 Illegal east coast rock lobster poaching	
9 Illegal intertidal shellfish / rockstripping	
10 Illegal gill and seine-netting	A large amount of illegal gillnetting for galjoen occurs along the Cape west coast. Much illegal gillnetting occurs in St Lucia and Kosi Bay, targeting fish species such as spotted grunter. Illegal seine-netting in St Lucia targets swimming prawns.

Organized operations for illegal tooth-fish operations have been a challenge for both nationally and internationally (Hauck and Kroese, 2006) and together with pelagic long-line illegal fishing have posed a serious threat to marine biodiversity (NSBA, 2004). The shift in compliance in South African has been mostly influenced by the highly organized syndicate of rock lobster and abalone poaching which is discussed by Hauck and Kroese (2006).

> "*The highest profile case of illegal fishing in South Africa was exposed in May 2001 when MCM received an anonymous tip-off about the illegal harvesting of rock lobster and other fish. This led to the seizure of a shipping container, owned by a commercial quota holder, Hout Bay Fishing (Director: Arnold Bengis), exported to the USA. Although the import declarations appeared in order, they differed from export permit issued by the South African authorities. A subsequent investigation identified approximately 20 other such shipments*".

It is said that the consequences of overharvesting in the rock lobster is felt more by the south coast rock lobster (*Palinurus gilchristi*) fishery where after 1990 the catch per unit effort

started to decrease about 50 % up to 1998, and after casting the Hout Bay fishing company out of the fishery in 2000 the CPUE increased by approximate 9% per annum over the next five years. Hout Bay fishing has been associated with the declines in the CPUE linked with possibility of under reporting their catch for many years, although it was not certain that this company is the only one operating illegally (Hauck and Kroese, 2006). Illegal fishing has been happening in South Africa since the early 1900s where informal access to the resource increased, for the rock lobster between 1920 and 1927 restrictions were placed to form sanctuaries but informal rock lobster trade continued to thrive. The schoolboys increased in the harvesting of rock lobster because of high demand of the resource to supplement their pocket money by selling rock lobster, and gradually schoolboys became fulltime divers financed by fish shops and restaurants doing informal fishing (Melville-Smith and van Sittert, 2005). The recreational fishers on the rock lobster have been taking more than their allocated bag limit of four a day selling their catch to the larger processing and exporting companies (Joubert, undated).

Illegal fishing in South Africa has been caused by the historical disadvantaged individuals who were denied legal access to the resource, and this has been a tool of pressurizing the government to gain legal access to the resource (Hauck and Kroese, 2006). Giving formal access could result in decreasing the poaching by the HDIs, since the transformation was too slow and the poaching was booming in the abalone sector (Sauer *et al.*, 2003). According to van Sittert (2001), poaching in the rock lobster was fuelled by the alcohol abuse in the communities whereby the fishermen will trade with five bags of rock lobster to get a bottle of brandy but also by unemployment. In many communities after losing their jobs they go to poaching as the only source of income. Fish Aggregating Devices (FADS) and artificial reefs pose a pollution threat and may increase access to otherwise inaccessible resources (NSBA, 2004). Hauck and Sweijd (1999) describe illegal fishing as a complex problem starting from the involvement of broad spectrum players, ranging from water's edge to the highly organized syndicates, and the issue of understanding why people get involved in illegal fishing which constitutes answers such as need, greed and politics.

Hauck and Kroese (2006) noted that the importance of non-compliance in fisheries was highlighted in 2001, through International Plan of Action (IPOA) to prevent IUU. South Africa has been involved with the Southern African Developing Countries (SADC) countries

for compliance strategies to reduce the cost of surveillance in the region, and South Africa participated in its first joint operation with Mozambique in 2004 (Hauck and Kroese, 2006).

There are also new institutions structures established Special Investigations Unit, Joint Investigations, Environmental Court Joint Investigations which work with South African Police Services (SAPS) and the South African National Defense Force (SANDF). South Africa has an 83 m offshore environmental protection vessel and two 47 m environmental protection vessels for the inshore areas. The vessels are equipped for firefighting, search and rescue work and with limited towing capacity. The three vessels are deployed in Cape Town, but they are working along the entire South African coastline and monitor various resources. These vessels are capable of patrolling the SADC region and are playing a significant role in regional compliance. The 83 m protection vessel is "Lillian Ngoyi" and her sister vessels are named "Ruth First" and "Victoria Mxenge" [8].

The Marine Living Resource Act

The Marine Living Resource Act (MLRA) of 1998 is the primary driving force for the transformation of South African fishing industry. The MLRA have set up some goals which include:

> *"provision for the conservation of the marine ecosystem, long term sustainable utilization of marine living resource and orderly access to exploitation, utilization and protection of certain marine living resource and equitable manner to the benefits of all citizens of South Africa.*" (Marine Living Resource Act 18 of 1998).

Furthering the transformation of the fisheries, allocation of rights has been the primary mechanism giving out principles and objectives set out by MLRA, three principles emerged from the objectives, namely:

Sustainability, 'preserving marine biodiversity, protecting ecosystems as a whole and conserving resources for present and future generations';

[8] See www.environmental.gov.za/branches/marinecoastalareaswork/vesseltours/Lillianngoyi.html: Accessed 15 November 2009.

Optimum utilization achieving 'economic growth and employment creation';

and *Transformation*, that is 'a need to restructure the fishing industry to address historical imbalances to achieve equity'(Branch and Clarke, 2006). The MLRA had for the first time recognized subsistence fishers giving them legal rights to access marine resources, thus the pilot program for subsistence rights was initiated by six communities in the WCRL fishery along the west coast (Isaacs, 2006). Communities on the west coast are heavily dependent on the fishing industry for their economical survival, harvesting species like the WCRL, snoek and white mussel. Employment is extremely limited because of poor levels of education and lack of necessary skills (Isaacs, 2006). The fishery serves as source of income for the local communities on the west coast.

Transformation in South Africa is one of the important objectives in the allocation of the long term rights, where there is equitable inclusion of historical disadvantaged individuals in all sectors of the fishing industry (BCLME, 2005). In the nearshore sector about 93 % of rights holders were granted to HDIs and 25 % of rights holders were female and in the offshore sector black controlled ownership accounted for 61.8 % of the TAC and the percentage of rights holders that are black controlled was 80.65 % (MCM, 2005). Since the implementation of the MLRA there have been some developments in the WCRL fishing sector, and new entrants to the fishery were allocated the TAC from 2 % to 9 % in 1999 with a further increase in the 2000 season to 47 %. The distribution of the TACs was reversed under MLRA after the minister was taken to court of law by established companies winning on a technicality (Isaacs, 2006).

The Department of Environmental Affairs and Tourism (DEAT) granted fishing quotas under the Sea fisheries Act, 12 of 1988 prior the MLRA in 1998. The nature of quotas under Sea Fisheries Act is similar to the rights granted by the MLRA, and they are not property rights (MCM, 2005). The transformation of the South African fishing industry is driven by socio-economic imbalances, as the apartheid policy had segregated access to the exploit marine resources in South Africa (van Sittert *et al.*, 2006).

Access rights allocation has adopted a principle of different types of fisheries by renaming them as clusters A-D, where cluster A and B are full commercial and cluster C and D are limited commercial (Branch and Clark, 2006). The amount of tonnage located to the offshore

fishery is more than 1.5 tonnes while the limited commercial is less than 1.5 tonnes. The Department in 2001 allocated 234 full commercial rights and 511 limited commercial rights to former subsistence fishers for the medium term rights. The long term rights allocation commenced in 2005 for a period of ten years (15 November 2005 to 31 December 2015), evaluating the fishery for performance indices including achievement of the agreed goals (MCM, 2005).

According to Branch and Clarke (2006), transformation have taken three avenues; re-allocation of some rights by reducing the amounts granted to existing companies and awarding them to new applicants the so called Historically Disadvantaged Individuals (HDIs), reorganization of the existing companies, reshaping the old industry to achieve equity, and the last avenue where MLRA recognized *subsistence fishers* in addition to commercial and recreational sectors.

Since the African National Congress (ANC) contested for its first democratic elections successfully in 1994, there has been a promise for "better life for all" through the programme of the Reconciliation Development Program (RDP) (Isaacs *et al.*, 2007). The democracy of 1994, the introduction of MLRA in 1998 and a new allocation system in 2001 have led high levels of expectations and more equality and more equitable access to fishing rights, where marginalized fishing communities expected security of owning fishing rights and ability to operate their own small businesses as to alleviate poverty (Joubert *et al.*, 2008; Isaacs *et al.,* 2007). Although the transformation in the fishing industry in South Africa was meant for the benefit of the country as whole, and in particular of the communities depending on the resource, it was impossible to accommodate all the potential new entrants to the industry. Many people were disappointed and rightly or wrongly accused government and others of mismanagement and corruption for not being allocated rights. This has led to major issues in the South African fishing industry, high levels of poaching of species such as abalone, and poverty in fishing communities seemed to worsen and the communities became split into camps of rights-holder/non rights-holder or poacher/non-poacher (Stewart *et al.,* 2009).

Established companies have used several factors to slow down transformation, and they had shown fear in the allocation of many right holders that would create chaos and economic instability (Isaacs *et al.,* 2007). Transformation started the chaos because there were more

fishers than fish, where many fishers received quotas that were rapidly becoming economically unviable[9].

Before the transformation started there were approximately six large companies which were in hold of the quotas: Oceana, Sea harvest, Irvin and Johnson, Atlantic trawling, Food Corporation and Viking fishing (BCLME, 2005). The redistribution created major dilemma between new entrants and the then existing right holders, because the new entrants were lacking infrastructure such as vessels, processing facilities and marketing networks (Isaacs *et al.,* 2007). Large companies forced the HDIs to lease their paper quotas since they did not have the capacity to process and harvest their quotas. In most South African fisheries there are too many right holders, thus creating conflicts with the goal of sustainable fisheries. The policy recommends the new entrants to invest in fishing vessels in order to secure large quotas in the fishery, leading to too many fishing boats and excess fishing effort within a fishery for the insufficient resource (van Sittert *et al.*, 2006).

[9]See http://www.tradersafrica.com/articles.asp?artleid=%7b0399af89-871d-4311-a88f: Accessed 13 November 2009.

Chapter 3: Theoretical aspects of capacity management

The concept of "fishing capacity"

The replacement of vessels in South Africa can be assessed using a theory of capacity management in fisheries.

A wide variety of fishing gears and practices ranging from small-scale artisanal to advance mechanized systems are used to harvest fish. Catching capacity is produced by fishing effort and the combined efficiency of the fishing gear and the fishing vessel as well as crew skills (FAO, 2002). Through the development of fisheries newer and more efficient fishing systems have been introduced. Most widely used harvesting methods are trawls, seines, long-lines, gillnets, entangling nets and traps (Boopendranath, 2007). The development of fishing gear and practices include the mechanization of propulsion, gear and catch handling, the introduction of synthetic materials, development of acoustics fish detection and satellite based remote sensing techniques, advances in electronic navigation and positioning fixing equipment. They all contribute to greater efficiency in fishing operations.

Fishing capacity is defined in many forms in literature, either by referring to fishing inputs or fishing output. Cunningham and Greboval (2001) use the general definition in defining the fishing capacity:

> *"Fishing capacity is, for a given resource condition, the amount of fish (or fishing effort) that can be produced over a period of time (e.g. a year) by a vessel or a fleet if fully utilized. That is, if effort and catch were not constrained by restrictive management measures"*

Basically the definition by Cunningham and Greboval is the same as that of Johansen in describing capacity in a production system, which Johansen (1967) defines capacity as:

> *"The maximum amount that can be produced per unit of time with existing plant and equipment, provided that the availability of variable factors of production is not restricted*" (Johansen in Mu *et al.*, 2007)

Kirkley and Squires (2003) relate the fishing capacity through their usage worldwide to the capital stock and specifically defines it as:

> "*Maximum available capital stock in a fishery that is fully utilized at the maximum technical efficiency in a given time period given resource and market conditions*"

The fishing capacity in most cases is defined through the basis of the background, for instance capacity may be defined by technologists, biologists, economists, social scientists and fisheries managers and all of these professions have different views on fishing capacity. The fishing technologists define fishing capacity in terms of physical measure of the fishing vessels as well as the operational or technical efficiency of a fishing vessel to attain a certain level of activity[10]. The physical measures refer to engine power, gear size, gross tonnage and other technological equipments, and the level activity could be fishing days, catch, or processed product.

The biologists define fishing capacity in terms of fishing effort and the resultant rate of fishing mortality, i.e. fishing mortality as the proportion of the fish stock killed through fishing. The biologists measure the fishing effort and then relate it to the fishing mortality. In this case if in practice a desired target level such as maximum sustainable yield (MSY) has been exceeded then fishing mortality is too high and the fishers have produced too much fishing effort. In biologists perspective fishing capacity may not be the issue if imposed regulations are in accordance with the target level of fishing mortality (FAO, 2004). In general, the biologists view of fishing overcapacity as a level of capacity that, when fully utilized, it produces a level of fishing mortality that threaten to reduce the fish stock biomass below the maximum sustainable yield [11].

The economists consider fishing capacity either in terms of inputs or in terms of outputs that could be produced if a boat was operating at maximum profits. In input terms, the economic definition of capacity can be considered as the minimum fleet and effort required producing a given total allowable catch or given output level (FAO, 2004). Operating at less than the full

[10]See http://www.fao.org/fishery/topic/14856/en: accessed 14 March 2010

[11]See http://www.fao.org/docrep/006/Y4849E/y4849e05.htm#bm05.3.1: Accessed 19 March 2010.

capacity implies that the boats are not achieving full capacity and profits could be attained by the increasing their output.

Fisheries managers tend to express fishing capacity in terms of the gross tonnage of a fleet, total effort such as standard fishing days, or even the rate of vessel utilization[12]. Assuming that there are no restrictions in place on effort that the measures may indicate that too many boats may potentially produce too high catch. Overcapacity is assumed to exist if the fleet is larger than required (FAO, 2004). Fisheries managers generally consider capacity to relate to measures such as gross tonnage (FAO, 2008).

A term often associated with capacity management and measures of capacity is capacity utilization. This is the ratio of the current level of outputs to the potential level of outputs, and ranges from zero to one. A capacity utilization score equal to one implies that the boat or fleet is operating at its full capacity level (Pascoe *et al.,* 2002). Capacity utilization is the degree to which the vessel is fully utilized, from an input based perspective it could be related to the ratio of the number of days actually fished to number days the boat could potentially fish under normal working conditions (Metzner, 2005). Capacity utilization can provide information on effectiveness of a capacity management program over time. When the capacity utilization declines, it may indicate that the program does not limit the capacity growth but just its utilization (Mu *et al.,* 2007). According to Kjærsgaard (2010), low capacity utilization implies overcapacity in the long term.

To effectively manage fishing capacity some measures are required, and the current level of excess capacity has to be determined in order to see whether capacity targets are being met. In economic terms capacity is defined as the maximum amount that can be produced per unit of time within the existing firm, provided there are no restrictions. In the case of fisheries, an equivalent measure of capacity would be the potential output if all factors of production were being fully utilized. If the potential output exceeded the current output, then the firm or industry would therefore have excess capacity (Pascoe *et al.,* 2002). The excess capacity exists when an effort level or catch exceeds the actual catch or effort level in given period. It is a short term problem that arises for a number of reasons ranging from higher costs or lower costs of fuel that may lead to boats operating for fewer days than expected (Metzner, 2005).

[12] See http://www.fao.org/fishery/topic/14856/en: accessed 14 March 2010

The excess capacity fall as underutilized capacity, it is a short run phenomenon and depends on the type of resource, the state of the resource and the environment in which fishers are operating (FAO, 2008). According to Kirkley and Squires (2003) excess capacity creates a number of problems by generating intense pressure in continuing to harvesting above sustainable levels keeping the fleet working as much as possible. The reductions in fleet size become politically and socially more difficult because the vessels are more vulnerable in a period of changes in the resource base and regulations. In the long term the fishing capacity results in overcapacity. Overcapacity is the excessive level of capacity in the long term, and it is a long term problem in the fishery. Overcapitalization exists if the fleet size is greater than desired to harvest a particular yield (Metzner, 2005). The desired level of harvesting is driven by management objectives, and they may be economic, biological or social or some the combination of the three (FAO, 2008).

Overcapacity is widely recognized as a major problem affecting fisheries, and its social and economic problems may lead to erosion of management control. An unexpected increase of fishing capacity in TAC regulated fisheries has been observed because of additional vessels entering the fishery in response to the responsibility of temporary rents. Overcapacity is perceived as a major impediment to achieve economically productive fisheries (Beddington *et al*., 2007). Overcapacity undermines achievement of long term sustainability of the resource. Basically overcapacity has effects on the stock and economic returns of the fleets (FAO, 1999). The biological health of the fish stock is affected by excessive fishing effort, resulting in reduced stock size. i.e. below the target levels of MSY in the fishery (FAO, 2004; Mu *et al.,* 2007). With a declining stock, fisherman are forced to race for their share in fisheries regulated by global quotas.

In quota fisheries, once the stock declines there will be increased high grading and fishermen will discard the undersized catch in order to maximize their resource rent (Mu *et al.*, 2007). The fishermen work harder to compensate for the depleted stocks using excessive capacity which may be sensitive to ecological areas and result in increased bycatch due to the excessive capacity (FAO, 2008). Economists refer to overcapacity as an indication of resource rent dissipation, where for instance higher profits may create incentives for new entrants in the industry or increased capacity by those who already are established in the fishery. In both cases the result will be economic waste of the resource (Mu *et al.,* 2007). The

increased incentives create congestion and crowding, and the catch rates begin to fall as the fishing grounds are repeatedly exploited. This reduces the revenues of the participants and increases the cost of harvesting. The overcapacity issue tends to go back to the biologists and economists, where the biologists have to consider the biological health of the stocks and the economists have to consider the revenue of the fleet. Pascoe (2007) argues that the fundamental cause of overcapacity is the lack of well defined property rights, and hence, that administrators have to address the underlying problem. Overcapacity is said to be difficult to manage. Administrators have to address the issue of existing pressure of the current capacity in use and also address social issues concerning employment. Reducing the number of boats in the current fleet would result in increased unemployment and often the fishers have no alternative source of income.

The International Plan of Action for fishing capacity has urged nations that "*States should develop the means to monitor fishing capacity systematically and accurately and to regularly assess any imbalance with the available fishery resource and management objectives*" (FAO, 1999). Even if the regulations are in place reducing the capacity in terms fleet size or engine power, it is important for the States to monitor fishing capacity permanently because technology development can still increase the capacity of the fleet, particularly in fish finding equipment and in fishing gear (Yu and Yu, 2008). Fishermen can find any ways to substitute whatever they have been restricted to, hence increasing the capacity of the fleet.

Causes of overcapacity

The origin of overcapacity is fundamentally the open access nature of the fishery. The focus on conserving fish stocks has led management authorities to move their fisheries from a condition described as of free and open access to one that can be characterized as regulated open access[13]. Access conditions in the fishery are one of the reasons leading to the overcapitalization, provided that there are regulations implemented in the fishery then there will be no overcapacity unless the output level exceeds the sustainable levels of the

[13] Regulated open access is a management structure in which some elements of the fishery are constrained, for instance using total catch under TAC systems or restriction in the use of boats or gear, but still fishers have free access to the fishery within the constraints.

resource[14]. The existence of the excessive levels has implications on the stock leading to economic problems, such as incentives to exceed imposed quotas, the race to fish and to increased capitalization. These generally create overcapacity (FAO, 2008). Another concept associated with causes of overcapacity are subsidies. Increases in fishing capacity have been a direct consequence of national policies aiming at developing particular fisheries. Subsidies in most nations were used to ensure the nations participation in shared and high seas fisheries, and can create absence of effective fisheries management to generate excessive levels of fishing and overcapacity (FAO, 2008). There are some contributing factors in overcapacity that have influenced the profitability of fishing such as:

- Growth of harvesting technology,
- Expansion of fish markets which provides favorable market prices,
- Globalization of the market for fish and fish product that are subject to international traded commodities and
- Changing nature of the fishing industry which is becoming more competitive and capital intensive.

The small-scale fisheries which are said to be community based fisheries are less capital intensive, and these fisheries have employment opportunities so they are more labour intensive. Such fisheries are less sensitive to the changes in operating costs because of the cheap labour that they can afford (FAO, 2002). The larger vessels employ fewer people, because they are less labour intensive and maximize profit while reducing capacity (Kjærsgaard, 2010). Fishery systems have a complex interaction between fish stocks and the factors such as labour and capital used in harvesting fish (Tai and Heaps, 1996). When considering the management of fishing capacity labour and capital also need to be considered in developing input-based management (FAO, 2004).

Capacity assessment measures

[14] Sustainable levels of the resource may refer to biological target reference point (MSY), economic reference point (MEY) and administratively through target levels of the required capacity within the fishery.

Many countries have developed a range of capacity indicators, and most of them they are based on physical attributes of the fleet (FAO, 2004). In some countries capacity is measured in terms of vessel numbers only, while in others capacity involves a number of complex capacity measures that include different vessels characteristics (Pascoe, 2007). These capacity measures indicators range from gross tonnage (measure of the vessel volume), engine power (kilowatts or horsepower) and the number of boats. Engineering measures such as vessel units based on combination of characteristics have been developed, for an example in UK and Poland where they use the combination of vessel length and engine power (Pascoe, 2007; FAO, 2004). There are generally two types of capacity assessment measures, input based measures and output based measures. The input based measures of capacity assume that the level of output is related to the level of physical inputs employed in the fishery. The link is between input level and the output level is basis for fisheries management using input controls (FAO, 2004).

Capacity management measures

Since the recognition of Exclusive Economic Zone (EEZs) as state property in 1977, nations were faced with increased national capacity to harvest their resources because of many vessels returning to home waters. The countries now had to face with increased capacity which needed to be regulated. Under fundamental state regimes various methods of managing the world's fisheries were proposed and adopted (Mather, 2004). According to Cunningham and Greboval (2001) capacity management can be defined as the implementation of policies and technical measures aimed at ensuring a desired balance between fishing inputs and production from capture fisheries. At a national level capacity management is regarded as the country's attempt to harmonize the harvesting potential of its fleet with the desired level of output from its fisheries (Yu and Yu, 2008). The management of fishing capacity is to making sure that the fishing capacity is used in such a way that fisheries remain sustainable and viable. Capacity management alternative purpose is to avoid overcapacity, if it already exists, to reduce and prevent the build-up of overcapacity (Metzner, 2005). Capacity management is generally integrated and undertaken within fisheries management policies by most nations.

The manager's focus on the size of the fishing fleet when dealing with capacity in a fishery, the problem is usually stated in terms of too many fishers trying to harvest too few fishes. The

solution is most often that a manager likely to implement to reduce the harvest, in order to allow the stock to recover and reduce the fleet to a point where it is commensurate with the long term potential yield from the fishery (FAO, 2008). The purpose of the capacity management is that to ensure the fisheries remain sustainable and viable using regulations, so capacity management is meant to avoid overcapitalization and overfishing (Metzner, 2005). Hence, capacity management addresses the issues concerning economists and biologists.

Overcapacity basically indicates that capacity is greater than the desired level and the capacity management identifies the desired level of capacity and bring the existing capacity in line with the desired level, and the desired level of capacity is either input or output based and is in relation with the stock size and level of exploitation (FAO, 2004). The existence of excess capacity does not pose any threat provided that the total output of the fishery is constrained to a sustainable level from pure stock perspective (Pascoe *et al.,* 2002). Overcapacity has biological as well as economic consequences, excess levels of fishing effort result in a decline of the size of stocks; yields are declining below maximum sustainable yields (MSY) due to the consequence of overcapacity, these impose implications for the success of the stock conservation measures. From an economic point of view the consequences of overcapacity are overexploitation and inefficient use of the resources, the capital stock and all productive factors associated with the fishing activity (FAO, 2008).

The FAO Code of Conduct for Responsible Fisheries recognises that the overcapacity threatens the world's fisheries and it recommends that

> *"States should prevent overfishing and excess fishing capacity and should implement management measures to ensure that fishing effort is commensurate with the productive capacity of the fishery resources and their sustainable utilization. States should take measures to rehabilitate populations as far as possible and when appropriate"* (article 6.3)[15].

The Code of Conduct for Responsible Fisheries points out in article (7.2)[16], that it

[15]See http://www.fao.org/docrep/005/v9878e/v9878e00.HTM#6. Accessed 14 March 2010

[16] See http://www.fao.org/docrep/005/v9878e/v9878e00.HTM#7. Accessed 14 March 2010

> "*recognizes that long-term sustainable use of fisheries resources is the overriding objective of conservation and management, States and sub regional or regional fisheries management organizations and arrangements should, inter alia, adopt appropriate measures, based on the best scientific evidence available, which are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing countries".*

Management of fisheries is important in achieving societal goals through the implementation of appropriate policies and effective regulatory instruments (Charles, 2001). The decline in fishing income as results of overcapacity have an impact on the fishers as well as other sectors in the local economy particularly in small scale coastal communities which fishing sector serve as a source of income (FAO, 2008).

Capacity management is classified in two broad groups in terms of incentives effects they are likely to produce on users. One is the incentive adjusting approach which provides economic incentives for fishers to control capacity of their own without direct government intervention. The other approach, in which the government use attempt to manage capacity, is the incentive blocking measure. Incentive blocking measure attempts to block the incentives of open access, which leads the fishers to race for fish and overextend their investment (Yu and Yu, 2008).

Incentive blocking measures

Most fishing nations commonly use the incentive blocking measure in fisheries management. According to Metzner (2005) the incentive blocking approaches encourage the fishing participants to work and maximize their revenues via catch quantities at whatever cost instead of minimizing costs and maximize profits. Incentive blocking measures attempt to block the economic motive that encourages the fishers to increase their fishing capacity. The incentive blocking measures are also regarded as the command and control measures that restrict the operation of the market (FAO, 2004).

In practice several conditions make effective control of fishing effort difficult. The command and control measures do not remove the economic incentives that generate overcapacity (Jensen, 2002), for example; license limitations preventing new entrants from joining the fishery do not reduce the incentive for fishers to increase their individual catches (FAO, 2004). Fishing capacity is not a one-dimensional concept (Jensen, 2002). The selected inputs may encourage the fishermen to avoid the regulation by increasing the unregulated inputs. The fishers may for example increase the engine power of their vessels to cover more grounds, and this input substitution results in higher operating costs than used to be. The end results with increased mixes of inputs by the fishermen is an inefficient fishing fleets with excessive fishing effort levels, overfished stocks and complex fisheries management (FAO, 2004).
Measures in this category include:

Limited entry programs, license limitations programs
The limited entry is a common management tool used by government by issuing a limited number of licenses to fish. The limited entry creates rights for fish and limits entry in new fishing boats or fishers with the aim of limiting potential capacity (FAO, 2002). Limited entry is the first step in addressing the open access problem although it is not sufficient by itself as a management measure. It requires other controls to manage capacity as capacity can increase in various forms such as capital stuffing, changes in gear and fishing periods (FAO, 2004).

Buyback programs
Buyback programmes buy and remove vessels, licenses or vessel capacity units from a fleet to decrease capacity. Buyback programs are explained more in detail below.

Gear and vessel restrictions
Gear and vessel restrictions attempt to control the use of inputs in the production of fishing effort. Some fishing vessel tends to use the size of the fishing gear that is appropriate to vessels size and horse power but newer developments in gear increase the effectiveness of the vessels (FAO, 2002). Minimum mesh size, restrictions on the number of pots or traps, limits on the length of the long-lines are methods employed in regulations of fishing gear. Fishers

generally try to avoid gear regulations by substituting with other factors that are not regulated in order to increase efficiency of the gears (FAO, 2004).

Total allowable catches (TACs)

Capacity management requires allocation of fishing rights between different user groups and also in international waters a division of stocks between nations. The aggregate quotas are used to maintain or rebuild the stock by establishment of total allowable catches (TACs). TACs are likely to speed up capacity rather than reducing it, as new entrants allocated TACs because of the resource rents causing expansion in fishing capacity (FAO, 2004).

Individual effort quotas (IEQs)

The individual effort quotas (IEQs) limit the fishing effort that a craft can apply to a fishery. The effort quotas may fall between the two categories incentive blocking and incentive adjusting measures, because they have the benefit of creating incentives for self adjustment. The restrictions are usually placed on the trawl time, time away from the port or fishing days that a vessel can employ. Sometime the IEQs are transferable, and fishers can purchase them from existing fishers or sell to new entrants (FAO, 2004).

The incentive blocking programs are introduced to achieve short term goals, and are effective in slowing increases in capacity in the short term (FAO, 2008).

Incentives adjusting measures

The incentive adjusting approach is a long term solutions to correct overcapacity through the changing the regulatory system creating market forces that reduces overcapacity. They are designed to eliminate overcapacity by correcting the open access market externality in fisheries by establishing user rights (Metzner, 2005). The changing of regulatory environment creating market incentives causes the fishers to adjust their fishing capacity, as well as the elimination of the open access externality that causes the fishers to behave as if they own the resource (FAO, 2008). Fishers have the reason to invest in the future by conserving both the fishery resource and other resources used in its harvesting when the fishery resource is no longer free to anyone harvesting it. Incentive adjusting measures transform race to fish into a

principle of production where maximizing profit of limited resource at a minimum costs (Metzner, 2005).

Measures in this category include:

Fishing rights including community development quotas (CDQs), cooperative fishing rights, community–based management user rights

Community based and co-management has been introduced in many countries and has success in reducing capacity. This type of restrictions brings management to the community, and involving the community in designs and acceptances of management measures. The community based management also improves compliance in fisheries (Charles, 2001).

Area or region based Territorial Use Rights (TURFs)

TURFs are another means of controlling capacity causing the fishers to behave as if property rights for fishing ground exist. The particular fishing ground access is restricted to a group or a number of individuals where the group can determine the how to harvest the fish from the fish ground (FAO, 2004).

Individual fishing quotas (IFQs) and individual transferable quotas

Individual transferable quotas limit the fish that a fleet can harvest from a fishery and assign tradeable shares of total catch to the participants. ITQs have been regarded as effective in the capacity management in fisheries to which they have been employed but there are some critics regarding their applications in capacity management. There are concerns regarding the existence of *high grading,* when fish is paid according to size (FAO, 2004). The discarding of catch take over and above quota is another problem which has been observed in various ITQ applications.

Table 3.1: Management instruments: incentive blocking and incentive adjusting measures: source FAO (2004).

Incentive blocking instruments	**Incentive adjusting instruments**
Limited entry	Individual transferable quotas (ITQs)
Buyback programmes	Taxes and royalties
Gear and vessel restrictions	Group fishing rights (CDQs, etc)
Aggregate quotas	Territorial use rights (TURFs)
Non-transferable vessel catch limits	
Individual effort quotas (IEQs)	

Vessels decommissioning schemes

Many countries operate buyback programs such as Japan, Norway, Australia, the United States, Canada and those in the European Union and also Taiwan. This capacity reduction tool is often called in different ways from vessel buybacks, vessel decommissioning and vessel scrapping programmes. The buyback programs are designed to buy and remove boats, licences or vessel capacity units from fleets, and hence decreasing capacity (FAO, 2008; FAO, 2004). Chinas coastal and inshore water has increased number of small boats operation since 1985, the substantial increase has been caused by several factors. The factors include fish products prices which are profitably, migration of farmers to the coastal communities and uncontrollable fishing boat constructions. In addressing the issue China has an eight year buyback a programme (2003-2010) under Ministry of Agriculture (MOA); the aim is to delisencing and scrapping a total of 3750 vessel per year (Mu *et al*., 2007). In Taiwan due to the inadequacy of policy regulations, the government adopted mandatory and voluntary vessel scrapping. Due to the increasing number of vessel the benefits for the coastal communities decreased, the government implemented its vessel buyback program for licenses and vessel in 1991-1995. The voluntary buyback program was implemented in 2000 to meet the IPOA - capacity requirements and conservation of coastal marine resources (Huang and Chuang, 2010).

China is the one of the countries facing a serious problem of overcapacity in its marine capture fisheries. The management of fishing capacity is the responsibility of both State and private organisations, sometimes it is only the State and in others it is the combination of the two. China is the example of State responsible for capacity management and in attempt to include private organisation. The Chinese government is responsible for the management of capacity. China has launched a series of actions to control fishing capacity or in the capacity utilization (Yu and Yu, 2008). According to Mu *et al.,* (2007), China may phase into one of the principle of Code of Conduct for Responsible Fisheries (CCRF), participation where the government and industry jointly funded structural adjustment program.

The design of this programme is to remove physical capacity, but it also assumed that the reduction of harvesting capacity also occurs due to this program. The program also acts as a subsidy to the unviable firms in the industry to exit the industry and by helping the remaining vessels to become more economical efficient, providing economic assistance to the fishery or region (FAO, 2008; Jensen, 2002).

Jensen (2002) argues that buyback program reduces the risk of investing in fishing vessel, and in a perfect capital market the decrease in risk is normally followed by reduction in interest rates and increase in the incentive to invest. The decommissioning scheme if used as the permanent instrument may have unintended effects on the incentives and yet the buybacks on itself would not remove economic incentives for creation of overcapacity. In actual practice achieving the goals of the scrapping programs seemed to be very limited, it is associated with the existence of other fishery regulations (FAO, 2004). In short term capacity may be reduced in fishery through buybacks and in long term fishery incentives remain, and improvements in stock abundance will attract additional capacity. Unless the decommissioning scheme are used in conjunction with access rights management system that correct market incentives (FAO, 2008).

The target level of removal of the capacity using buyback program may face some consequences, fishers looking for higher price for their ageing vessel. In the Australian prawn fishery where the management authority has a fixed price, fishers had to accept or decline the price hence higher prices attract active vessels. The expectations of future higher prices offers create disincentives for fishers to participate in the program as they expect to sell with higher prices in the following year (Pascoe *et al.*, 2002). Sometimes the decommissioning scheme

cause problems if there are limit controls in place, because fishers can reinvest in more efficient vessels after their buybacks. In Spain it was observed that more efficient vessels were decommissioned but the skippers were re-entering the fishery using the money from buyback scheme for new and more efficient vessels (Pascoe *et al.*, 2002).

The responsibility for the management of fishing capacity

The United Nations Law of the Sea (UNCLOS, 1982) recognises that States have a responsibility for managing all living and non living natural resources within their Exclusive Economic Zone (EEZ) based on article 56 (1a). According to FAO (2008) the Environmental Agenda for the 21st Century arising from the 1992 Green Summit held in Rio de Janeiro identified global fishing capacity as an international problem and included all governments to cooperate in addressing the crisis in global fisheries. Most States impose target restrictions on catches in key offshore fisheries while many inshore remain relatively unregulated. The issue of capacity management has been identified in the early 1990s, yet the FAO held technical workshops on measurement and management of fishing capacity, then the International Plan of Action for the Management of fishing capacity was adopted in 1999. The IPOA-capacity encouraged countries to manage fishing capacity in three phases, through assessment and diagnosis, adoption of management measures and periodic adjustment of such assessment and diagnostic measures (Huang and Chuang, 2010). These steps were urged to be progressively implemented by 2005 by both regional fisheries management organizations (RFMOs) and States.

The objective of the plan of action is to strengthen national and regional organisation in managing the fishing capacity issues and reduce excessive fishing capacity in world fisheries (Yu and Yu, 2008). The nations should base their fishing capacity management on principles and approaches of Code of Conduct for Responsible Fisheries, which include participation, phased implementation, holistic approach, conservation, priority, new technologies and mobility. The cooperative management once in place it will make the industry itself be responsible for the capacity management. It also said that effective participation of fishermen is cost effective and easy to implement.

Chapter 4: Research methodology

Introduction

Methodology is defined as the choice we make about cases to study, methods of data gathering, forms of data analysis etc, in planning and executing study (Silverman, 2005). The methods can be either qualitative techniques or quantitative techniques. The chapter elaborates qualitative and quantitative techniques used in the study.

The study employed inductive strategy as an attempt to answer research questions. According to Blaikie (2000) inductive strategy starts with data collection, followed by data analysis, and then the development of generalizations. As the study tries find suitable managements regarding the changing of vessel within the west coast rock lobster sector.

Data collection

This is a process of gathering information or processing and preparing data, the data obtained can be used to obtain information either to keep record or to make important decision about the situation (i.e. draw conclusions out of the collected data)[17]. The data can be in the form of interviews, words, figures or documents etc. The data can be either primary or secondary.

In this study the information was gathered using primary and secondary data sources. The sources of the primary data are the government documents on the vessel approvals for changing of vessels and the secondary data used extracted from the government data base MAST, internet, published journals and the fishery policy documents. As mentioned in the introduction of the thesis; the fieldwork conducted is based on both qualitative and quantitative methods for data collection. The content analysis of documents was the method used for gathering primary data and secondary data, to be used to enrich the study.

[17] See http://en.wikipedia.org/wiki/Data_collection: Accessed 15/04/2010

Qualitative methods

Qualitative research methods are characterized by an emphasis in describing, understanding, and explaining complex phenomena, tracking unique or unexpected events, revealing experience and interpretation of events by actors with widely differing stakes and roles; giving voice to those whose views are rarely heard; conducting initial explorations to develop theories; and to generate and test hypotheses; and moving toward explanations. The focus is on understanding the full multi-dimensional, dynamic picture of the subject of study[18].

Qualitative methods are also effective in identifying intangible factors, such as social norms, socioeconomic status, gender roles, ethnicity, and religion, whose role in the research issue may not be readily apparent. The qualitative researcher is therefore concerned with the understanding rather than explanation; naturalistic observation rather than controlled measurements; and the subjective exploration of reality from the perspective of an insider. This can be achieved through unstructured interviews and meetings, assuming that during the process detailed and rich information would be generated. The distinction of the qualitative approach, data is presented in the form of words, pictures and quotes (Silverman, 2005). In this study the qualitative technique used in the analysis of documents.

Quantitative methods

The quantitative research methods are generally concerned with counting and measuring aspects of social life (Blaikie, 2000). The quantitative research refers to the systematic empirical investigation of quantitative properties and phenomena and their relationships. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena.

The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships[19]. The sources of data were Marine and Coastal Management catch data on WCRL nearshore fishery. The data is from the 2006/2007, 2007/ 2008 and 2008/2009

[18] See http://www.colmr.research.va.gov/mgmt_research_in_va/methodology/qualitative_research.cfm#4: Accessed 25/02/2010

[19] See http://en.wikipedia.org/wiki/Quantitative_research: Accessed 26/02/2010

fishing seasons. The quantitative approach in the study will serve to support the trend of right holders changing vessels in particular season under study. The trend in the vessels changes is the nature of the study to determine whether the rate of right holders changing vessels is increasing or decreasing.

Data reduction and analysis

According to Namely *et al.,* (2007) analysis often falls into one of two categories, the content and thematic. In content analysis a researcher evaluates the frequency and saliency of particular phrases in the body of text in order to identify keywords. The thematic approach is more involved and nuanced. Thematic analysis identifies and describes both explicit and implicit ideas.

Content analysis of documents

This is a non-intrusive form of research. This involves reviewing documents, memos or other pieces of written information for content and themes. By examining written word, the researcher is studying one type of communication that occurs in the selected sample. The documents as data source can be used in conjunction with either quantitative or qualitative methods (Blaikie, 2000). During the fieldwork the qualitative data was collected on the government documents. With the help of the colleagues in the resource management I was able to locate the necessary documents. In this study, right holders within the west coast rock lobster nearshore fishery applications for vessel change and approvals were used to extract contents on documents. It took a lot of time for me to process the documents because these documents were mixed up, all applications for vessel changes in WCRL both offshore and inshore fisheries were stored in one place.

Limitations of the study

There are some limitations on this study which should be taken into account. The study is based only on one fishing sector, the West Coast Rock Lobster nearshore. There are also other fishing sectors which experience vessel changes and which may not in the same manner as the west coast rock lobster nearshore, therefore maybe it will be impossible to state general conclusions about vessel replacement in fisheries of South Africa. Secondly so far the data is limited this may give some problems in the analysis of the study. Lastly the study has limited time constraints as it difficult to carry out a detailed research within a semester.

Chapter 5: Analysis of vessel changes in the WCRL nearshore fishery

Introduction

This chapter discusses the main reasons for the right holders to change their nominated vessel to replacement vessels and attempts to answer the research question underpinning the *reasons* for changing vessels in the South African west coast rock lobster fishery and *how often* the right holders change their nominated fishing vessels.

Reasons for changing of vessels

There are several reasons provided by boat change applicants as the causes for changing fishing vessels. These reasons range from investments in the fishery, safety at sea, engine breakdown of the vessel, expensive catching charter fee to financial difficulties. In the analysis, the reasons have been put into ten categories as follows Investments and share holding; Safety at sea; Vessel owners with financial difficulties; Vessel breakdown; Charter fee; Catching agreement break down; Many right holders in one vessel; Boat selling; Shortage in catch and Miscellaneous reasons. In the small scale fishing sector in South Africa most right holders do not have their own vessels to harvest their quotas, right holders depend on company owned vessels or individual owners for their quotas to be caught and they may require replacing the vessels (DEAT, 2005).

In relation to the investment and share holding, the long term rights allocation policy requires the right holders to invest in the fishery as stated:

> *"Investment in a vessel nominated to harvest the resource and other fixed assets will be recognized as long as that investment demonstrates a genuine intention to share the risk of participation in the sector. The level of investment will be assessed with the reference to the quantum held during the medium term rights allocation process*[20]*"*

[20] General policy on the allocation and management of long term commercial fishing rights: 2005, Department of Environmental Affairs and Tourism.

As stated earlier, in order to own fishing vessels most right holders rent a fishing vessel to harvest their quota. The fisheries department in South Africa had recognized that once the allocation of long term fishing rights is done, the right holders will introduce new vessels into the fishery (DEAT, 2005). After the allocation of long term rights, the right holders have been changing from their current harvesting vessel. The reason being some of the right holders have bought their own new vessel to invest in the fishery, and they apply for a change from current vessel owned by the leasing company or individual owners to the replacement vessel (fishing vessel that the right holder wishes to use). In some cases the right holders apply for a change from current vessel to the replacement vessel because they have shares in it.

The right holders buy shares from the companies owning vessels or from individual owners so as to own a particular share percentage in the vessel, Investment in a vessel and other fixed assets are recognized as long as the investment demonstrates a genuine intention to share risk of participating in the sector (MCM, 2005)[21]. Before the application for commercial fishing rights were allocated rights in 2005, applicants had to show access or ownership to a vessel for harvesting a particular resource. In some fisheries applicants have to provide a business plan for the fishing operations indicating financial viability of the fisher or the company (PREM, 2005). This category of investment and shareholding accounts for 26% of the reasons stated by the applicants of vessel changes in all the processed vessel approval documents.

In all the fisheries in South Africa vessels operating prior from being allowed to the sector undergoes a safety test by the South African Maritime Safety Authority (SAMSA). For the safety of staff and crew applicants have to comply with the regulatory requirements of SAMSA Act 5 of 1998 and the regulations promulgated in terms of the Merchant Shipping Act, 57 of 1951 (MCM, 2005). SAMSA approves the vessels if it is seaworthy to operate. Through the application of the vessel change right holders also provide a SAMSA certificate of the vessel they are going to use. In the WCRL nearshore fishery the right holders sometimes use smaller vessels, so they frequently change to larger vessels, but not more than 8 meters, as this is the maximum length of the required vessel in the sector. Fishing operations are conducted under various environmental conditions, and depending on the region of

[21] Right holders who bought shares at a minimum costs or no costs at all are not recognized as investment and the level of investment is assessed through the quantum allocated for the right holder during the medium term rights allocations.

operation, bad weather may hamper the fishing vessels. This is what the applicants mention as their reason for changing of the vessel "*the old vessel is traditional unsafe and the weather conditions in his region would not allow him to reach fishing grounds and I feel like I will not get my all allocation with the current vessel"* and other right holder had mentioned "*the current vessel is too small to handle the bad weather they are experiencing in the area".* Right holders feel safe on larger vessels than on the small ones. One of the vessel change applicants has mentioned that *"the previous vessel is too small and unsafe, there is no working space for the skipper, trawl man and the right holders and this vessel is going to be used for recreational purposes"*

Regarding multiple right holders on one vessel, the vessel owners normally accept many right holders to harvest their quotas and end up not harvesting all the quotas. The right holders tend to change to other vessels because the current vessel is oversubscribed and they fear that his or her quota will not be harvested. Often the vessel owner end up releasing some of the right holders to look for other vessels to catch their quotas as they see that they cannot catch the entire quota for the right holders they have accepted. One of the applicant mentions "*the current vessel has no capacity to harvest the volume of all the boat nominees in one season, so it releases some of its right holders".*

Economic efficiency studies conducted by FAO indicate the costs within the vessels depend on the basis of the fishery scale. The small scale fishing vessels capital costs in South Africa range from six to sixteen percent of the net costs, as the fuel and running costs are the greatest expense. On the medium and large scale, labour costs which are part of the operating costs, are noticeably higher and also the vessel costs higher (FAO, 2005).

The fuel costs in South Africa are very high, and many vessel owners in the small scale fisheries find themselves at financial difficulties to go to the sea. Regarding fuel prices, one of the vessel change applicant mentions "*the vessel owner released the applicant because of the limited quota and the fuel costs will be high while the catch cannot cover the costs"* and another applicant mentions "*the vessel owner refused to go to the sea as the fuel costs are very high".* As the fuel prices rise now and again the vessel owners have to find ways to get out of the financial crisis. Of all the applicants documents vessel owners with financial difficulties account for eight percent. The category of boat selling will also apply here, vessels owners when they are in financial crisis they begin to their sell their boats. Keeping the boats

by themselves is expensive and the only option for them to sell the vessel. The right holders changing their nominated vessel due to the owner of the vessel selling the boat is about four percent. According to FAO about 60 percent of the commercial operational fleets are ageing and more than 20 years old (FAO, 2005)[22]. Since these vessels are old, they need maintenance and repair which is often very expensive, and this category account for fourteen percent[23]. The bad weather on the west coast damages some vessels, and some vessel owners do not have means for repair costs.

On the issue of the charter fee, the quota holders who do not own a vessel rent a vessel from the companies or certain individual vessel owners. The right holder and the vessel owner make a catch agreement, which should be provided at the MCM during application for change of vessel. In the WCRL nearshore fishery, the cost of harvesting for a particular right holder ranges from fifteen rand per kilogram to thirty rand per kilogram. The amount they agree on depends to a large extent on the skipper of the vessel. About eight percent of the right holders change to other replacement vessels to obtain cheaper harvesting costs. Some applicants for a vessel change mention on their applications that "*the applicant had a bad service from the nominated vessels and has a better offer in the replacement vessels"* and the others mentions reasons such as "*the charter fee of the nominated vessels is too high and the applicants has a better offer on the replacement vessel"*.

There are various more specific reasons given by the right holders wishing to change their nominated vessels such as:

- *The client wants to change to a more reliable vessel that will catch his fish, had lots of problems with the nominated vessel owner.*
- *The vessel owner has long been sick and doctor advised him not to go to the sea.*
- *The current vessel is going to operate on another fishing sector, the traditional line fishery.*
- *The applicant has no contacts with the nominated vessel owner.*

[22] The percentage of the aging vessels refers to overall operational fleet in the South African fisheries.

[23] About fourteen percent of right holders are stating that maintenance of the vessel is very expensive and are changing their nominated fishing vessel due to the costs of maintaining fishing vessel.

Sometimes the right holders have catch agreements with vessel operating on other sectors which put them at risk of not harvesting the quota during the season because they are busy in other fisheries. Some of the vessels are not only involved in one sector, they are also operating on other fisheries such as the traditional line fishery. In case of the sick vessel owner, SAMSA provides safety training course for the crews and skippers, and if the persons are not medically fit they are not allowed to go to the sea. The vessel owners are said to be unreliable creating problems with right holders and some right holders do not have contact at all with the vessels owner and probably the owner is operating from another harbor. Some of the right holders require only a an additional vessel for harvesting their quotas, as in the area 7 and area 8[24] catch rates of the west rock lobster are very low. The right holders need the additional vessel as to increase the fishing effort to finish their quotas in time, and they have fear that the season will be closed without the catch of the full quota for them. Figure 5.1 represents the reasons which give more weight on the processed documents for the changing of the vessels.

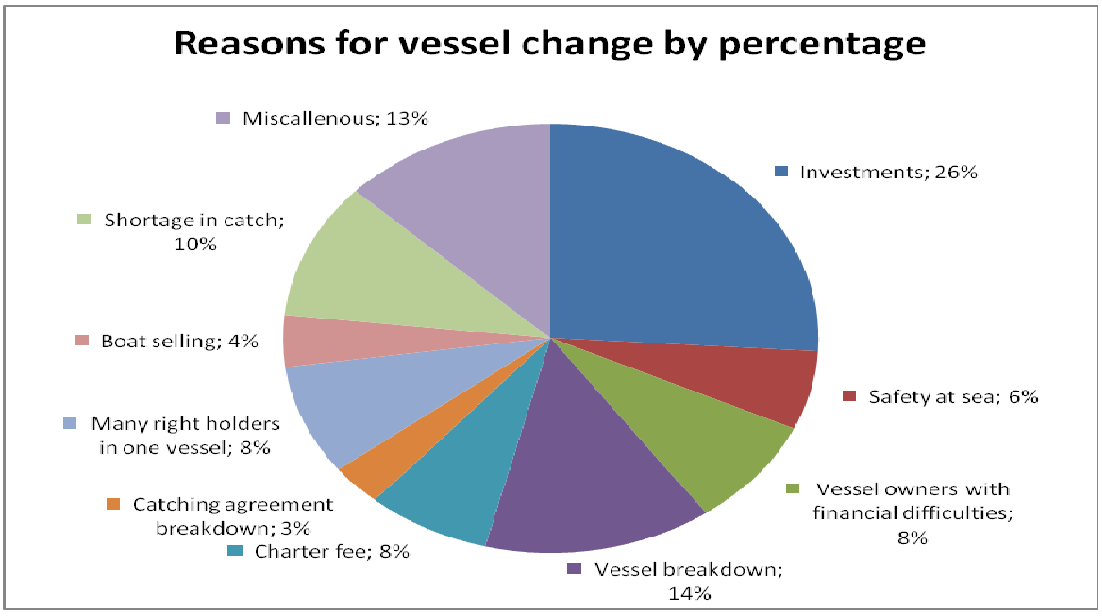

Figure 5.1: Reasons for the change of the vessels represented graphically by percentage

[24] See map in the background of the fishery chapter

The department of fisheries (MCM) in South Africa has recognized that after the allocation of long term commercial fishing rights the new entrants who do not own fishing vessels will seek to introduce new vessels or they may require replacing current nominated vessels. In South Africa overcapacity is one of the primary threats to the resources and put burdens on monitoring and enforcing compliance. Introduction of effort limitations are implied where necessary to limit the effort and the ageing vessel are recognized to be replaced[25]. Any cumulative effect in effort is carefully monitored by the introduction of new vessels into the fleet, right holders are not permitted to introduce vessels that are capable of excess capacity in their allocations (DEAT, 2005). The squid fishery and the traditional line fishery are the two fishery sectors that follow some certain rules regarding issues with changing of vessels[26].

In the squid fishery sector the applicants nominated vessels are assigned to length categories which determines the maximum number of persons per vessel (DEAT, 2005). If the applicants were to apply for a change of nominated vessel to a replacement vessel, they have to change within the same category they belong to. For instance in category three, the vessel length is 13 meters to 15 meters which allows a crew of 16 persons. A right holder changing the vessel to another category would be intensifying the fishing effort in the fishery, and hence increase the problems of overcapacity.

In relation with the traditional line fish sector, the fishing right holders are allowed to change their nominated vessels with regard to the length, a length of two meters increment is allowed to any right holder who wishes to change from the nominated vessel to a replacement vessel. But this change can only be done once, and a new change to a larger vessel after the first change is not permitted.

Currently MCM has no legitimate and illegitimate reasons or rules for changing of vessels that are in place which can be used as guidelines. The department uses bits and pieces in the policies of the fisheries, most of the fisheries policies mention only *suitable fishing vessels*, and when a right holder wishes to change a vessel, would do accordingly to a suitable vessel. In the WCRL fishery there is a proposal that, if a right holder wishes to change a vessel that is

[25] See Ref. (20)

[26] Upon changing or replacing a vessel, a right holder has to follow those rules. Breaking of those rules is regarded as illegitimate.

already operating in the fishery he does not need to apply for a vessel change, and should only notify the department that he or she is using a particular vessel, unless the vessel is operating in different fishery, but it is not yet in place. The Fishing Effort Advisory Committee (FEAC) had been responsible for the changes in vessels in MCM; Feike stated that FEAC had been making its own rules in allowing vessel changes. There was a case in the pelagic sector and swordfish sector which MCM did not allow the foreign flagged states to harvest the resource, Feike (2008) regarded this as illegitimate because South Africa does not have the capital and skills to harvest the resource. MCM had also gone against the United Nations Convection Law of the Sea (UNCLOS) where a sovereign coastal state is unable to fully harvest domestic resource should allow foreign flagged states to harvest the balance.

How often do right holders change their fishing vessels?

From the MCM catch data for the WCRL nearshore sector, it clearly shows the fishing vessels each right holder had used to harvest their quota. The catch data indicates how many fishing vessels a right had used throughout the fishing season. There are three seasons observed from 2006 to 2009, during the season of 2006/2007 in total of the right holders 21.15 % changed their nominated fishing vessel. In the following seasons of 2007/2008 and 2008/2009 about 16.01 % and 2.3 % respectively indicate that right holders have used more than one vessel to harvest their quotas. The WCRL fishery had been recognized as leading fishery in receiving most applications for the vessel changes in both offshore and inshore fisheries.

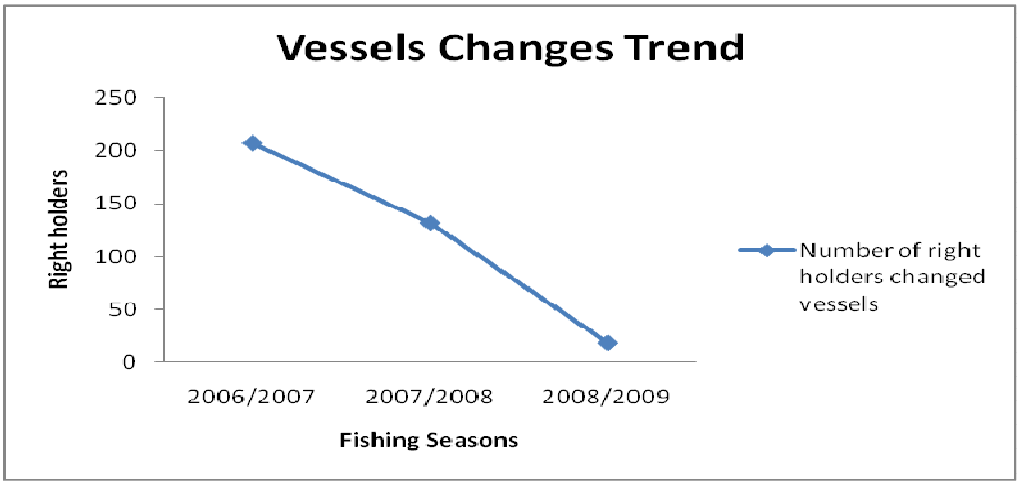

Figure 5.2: Trend of the vessel changes in the west coast rock lobster nearshore fishery

The figure above illustrates the trend of vessel changes by the right holders in the WCRL nearshore fishery in the last three seasons. According to the past three seasons there has been a dramatic decrease in number of right holders changing vessels about 14 % decrease in the 2008/2009 season from the previous season, however as stated by Feike (2008) that quota holders change vessels now and again and some more than the others, this decline in the vessel changes may have positive impacts on government, notably in administration, in terms of administering and recording of vessel changes. The declined number of right holders changing vessels is an indication of decreasing the work load in processing of the applications. Most of the right holders changed vessels through investments; the declining trend provides the indication of potential redistribution of access rights and fishing capital. Now right holders own their vessels.

In the WCRL nearshore fishery there were 823 right holders in 2006 and 207 of these right holders have changed their nominated vessels, and again in season 2007/2008 and 2008/2009 there were 824 and 825 right holders in which 132 and 19 respectively used more than one fishing vessel. The table below demonstrates the number of right holders who had changed the nominated vessels in the last seasons.

Table 5.1: The number of right holders changed vessels per season

Fishing season	Total No. Of Right holders	Right holders changed vessels	Fleet capacity (no. of vessels)
2006/2007	823	207	391
2007/2008	824	132	399
2008/2009	825	19	380

As we can recall from the background of the WCRL nearshore fishery there are fishing are fishing grounds which are divided into six fishing zones (Zones A to F), Zone A to Zone C each consisting of two fishing areas (Area 1 to 6), and Zone D divided to four areas (Area 7 to 10)[27]. There are also geographically separated small fishing areas which have been formed to

[27] See map in the background chapter (2) of the fishery.

Zone E (Area 11) and Zone F (Area 12, 13 and 14). The TAC is distributed according to these zones. Both season 2006/2007 and 2007/2008 had the same allocation of the quota, Zone A allocations category were with right holders allocated 1000 kg and 500 kg and Zone B, Zone D and Zone E allocated 750 kg and 500 kg.

The other zones C and F had three categories with Zone C allocated 750 kg, 500 kg and 250 kg while Zone F with 750 kg, 500 kg and 321 kg. In the season 2008/2009 it was a different case with the TACs lower, Zone A allocated 807 kg and 403 kg, Zone B with 606 kg and 402 kg while Zone C with 600 kg, 400 kg and 200 kg. Then Zone D and Zone E had the same allocation of 603 kg and 402 kg, however Zone F was allocated 603 kg, 402 kg and 258 kg. The allocations depend on the abundance in the area or zone a right holder applied for, and investment in the fishery and job creation (MCM, 2005). The figure below illustrates the right holders changed a fishing vessel with respect to the quota allocated.

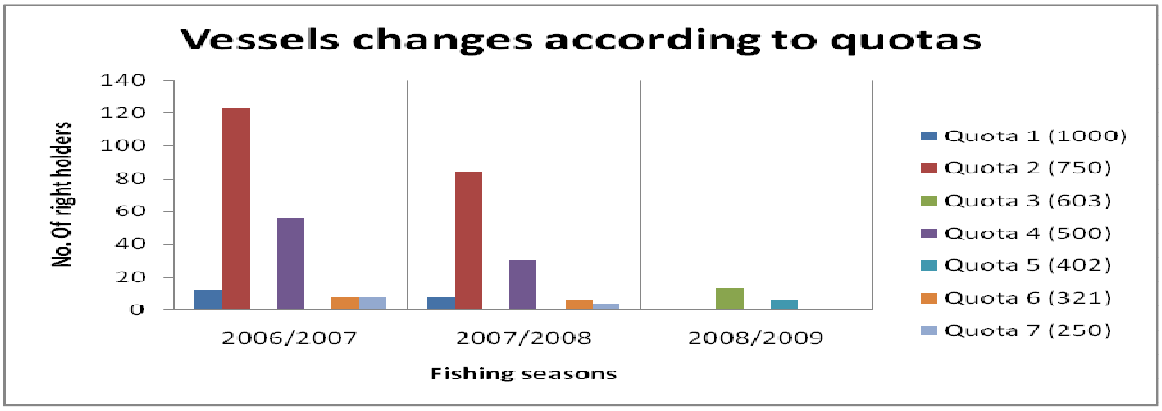

Figure 5.3: Right holders change vessel according to quota allocated.

Of all these allocations in each season it is notably that right holders allocated 750 kg dominate fishing vessel changes during both 2006/2007 and 2007/2008 except 2008/2009 because there were no allocations of 750 kg. During the season 2006/2007 about 60 % of the right holders allocated 750 kg changed their nominated vessels and allocation of 500 kg accounts 27 %, and the of the allocations share the remaining 13 %. In the season 2007/2008 the allocation category with 750 kg accounts for 63 % and the 500 kg category with 23 % and the rest share 14% remaining. In the last observed season of 2008/2009 right holders allocated

603 kg dominate the change of vessel and accounts about 63 % while right holders allocated 402 kg account the remaining 27 %.

In the WCRL vessels changes has been a problem through too many applications for changing of vessels, but there other problem that exists is the issue of capacity. The capacity in the west coast nearshore fishery sector has been stable in the past three seasons (2006 to 2009) which the capacity has been determined in terms of quantity of vessels per season. In the 2006/2007 season there were 391 vessels, and the following season the vessels slightly increased to 399. In the 2008/2009 season the harvesting vessels decrease from 399 to 380, as table 5.1 illustrates the number of vessels per season. Marther (2004) argues that the entry and the exit of vessels within a fishery are largely determined by the TAC, and also declining TAC indicates a fall in the number of vessels. The TAC depends on the previous year harvest and environmental factors affecting the fishery.

The TAC for the WCRL nearshore during the season 2006/2007 and 2007/2008 was the same, although the TAC was stable the number of vessels increased in the 2007/2008 season by additional seven boats. In the season 2008/2009, Mather's proportion of TAC to the number of vessels proved to be correct as the number of vessels declined about nineteen vessels from the previous year number. The WCRL fishery itself is severely depleted with the exploitable biomass at about three percent and spawner biomass at approximately nine percent, which is why the TAC is declining on the fishery. The declining of the TAC could not be the only reason behind the exiting of some vessels; probably there are some underlying reasons for the declining vessels.

In the WCRL nearshore fishery the numbers of vessels have declined and also the number of right holders who have changed their current vessels also decreased dramatically. Since the trend of the right holders changing vessels has gone down especially in the last observed season, this could be the indication of the right holders are satisfied with their current vessels. This could be that right holders are operating in safer vessels now and feel safe with more working space in vessels and also *cheaper charter fee* meaning that they are harvesting with lesser prices as before. In some cases that right holders are now owning their own vessels. Some of the vessels which were operating in different fisheries probably are concentrating in one fishery since the TAC is declining in the WCRL and this could be one of the reasons of the declining vessels in the sector.

Chapter 6: What can be learned by the South African fishing industry from other fishing nations?

Introduction

This chapter dwells on the strategies used in other countries in dealing with vessel replacement issues. The countries chosen as illustrations case are Canada and Australia.

The Canadian fishery

The Canadian fisheries exploits over 100 commercial valuable species of fish and the fishing industry operates on the Atlantic and Pacific coasts and also about 800 freshwater lakes. The fishing industry in Canada consists of marine, inland, aquaculture and recreational fisheries. With the marine fisheries operating both offshore and inshore concentrating on groundfish fishery, while inland and freshwater fisheries are relatively low in catches and value (Pitcher *et al.,* 2002). One of the major commercial fisheries in Canada is in the marine ecosystem off Newfoundland and Labrador, a fishery which is over five hundred years old. The major commercial fisheries have sustained harvests over the centuries; these fisheries include cod fishery, crab and shrimp fisheries and the groundfish fishery. These fisheries have shown some signs of stress whereas the cod fishery has already collapsed (Murray *et al.,* 2008). The cod fishery in Canada collapsed in the early 1990s and has never recovered. This fishery was the foundation of the Newfoundland and Labrador fisheries and during the 1960s the groundfish fishery was severely damaged by foreign fishing vessels (Schrank, 2005).

Currently Newfoundland and Labrador fisheries have experienced a decline of approximately 25 % of the landed value of all species. In this province the Canadian government launched Fishing Industry Renewal Initiative with the purpose of tackling the problems and challenges facing the Newfoundland and Labrador fishing industry. The Fishing Industry Renewal Initiative (FIRI) was formed to pursue approaches for conservation, stock rebuilding and long term sustainability of the resource, all of which were of paramount importance. of all these objectives had to remain a paramount. The FIRI was based more on contributing ecologically

sustainable industry and achieving better balance between resource availability and harvesting capacity (FIRI, 2006).). In the Newfoundland and Labrador fishery there were too many fish plant, too many fish plants workers and too many fishermen for a commercially viable industry (Schrank, 2005).

Parsons (1998) argues in his paper that in most Canadian Atlantic groundfish fisheries capacity exceeds what is required to harvest that a resource and there is a reduction of up to 40 % to 50 % in both processing and harvesting is required for the future viability of the fishery. In the groundfish fishery the conservation objectives were to prevent the increase in harvesting capacity and to avoid catching of small fish through mesh regulations or gear limitations (FRCC, 1997). There were also other regulatory measures applied which included limited entry licensing, a vessel replacement policy, quota management with fleet sector allocations and enterprise allocations and ITQs. The FIRI had addressed the problem of capacity in the groundfish fishery and the approach from the Initiative was a long-term approach to vessel replacement policy which would allow safe, viable and less competitive fisheries instead of output controls (Parsons, 1998).

The vessel replacement policy of Fisheries and Oceans Canada was introduced in the early 1980s. The policy was developed for the vessels less than 20 meters in length and was intended to reduce the growth of harvesting capacity in competitive fisheries. Under this policy the capacity is defined in terms of length and cubic meter measurements (FIRI, 2006), and hence the replacement policy controlled the vessel length which proved to be the only one factor in fishing power (FRCC, 1997). Currently the policy is still in effect. The Supplementary Replacement Rules have developed for vessels from 10 meters to 20 meters, under this rules an approach in changing of vessels was developed in 2003. Fishers wishing to change their harvesting vessels had to make a proposal which will be assessed with the guidance of the ten vessel replacement guideline principles (FIRI, 2006).

The vessel replacement guideline principles are as follows adopted from FIRI (2006):

Vessel replacement proposals should:

1. *"Not compromise conservation and sustainable utilization"*
2. *"Not increase (and preferably reduce) overall harvesting capacity."*

3. *"Encourage the adoption of self-adjustment mechanisms".*
4. *"Not compromise safety and be consistent with the policies and regulations of other agencies responsible for vessel safety".*
5. *"Contribute to improved economic viability and not generate pressures for expanded allocations".*
6. *"Not result in any changes in allocations, fleet shares or access".*
7. *"Be readily enforceable".*
8. *"Be consistent with the objectives of current licensing policy."*
9. *"Take into account that fishing enterprises may hold licenses for more than one fishery."*
10. *"Only permit Core license holders to benefit from changes to rules".*

Basically the Canadian replacement policy was developed to serve three basic purposes; the vessel size and the conservation issue; orderly management of fisheries and policy on capacity management.

Vessel size and the conservation issue

The Canadian replacement policy is based exclusively on the length of the vessel which happened to be the only factor in defining fishing power, as larger vessels have a greater capacity to catch fish[28]. The larger vessels operate further offshore and faster and in terms of gear they carry more sophisticated gear and larger room for the storage of catch. Increase in fishing effort result from the newer vessels which carry navigation systems, more sophisticated gear and cover more fishing ground, and vessel length is only one aspect of capacity.

[28]http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/vessel-bateau/index-eng.htm. Accessed 20-12-2009

According to FRCC (1997), in the 1980s the smaller vessels were not able to operate further offshore so only fished close to their homeports, but gradually technology improvements in the smaller vessels gave them capability to further operate offshore. Although the licenses in the groundfish fishery were constant, the capacity of the fleet to find and catch fish greatly increased through technological innovations. This has meant that through these changes the Hache` Task Force in 1989 concluded that the vessel replacement rules had not been effective in limiting fishing capacity (FRCC, 1997).

Generally the replacement of vessels has an implication in conservation of the fish stocks. The rules are intended to define type and size of vessel in most fisheries which would support viable enterprises within sustainable harvesting levels without undue pressure to overexploit. In the replacement policy vessels size helps to maintain the sustainable balance between the available stock and the number of viable enterprises[29].

Orderly management of fisheries

The replacement rules in Canada were developed in competitive fisheries. The Task Force on Incomes and Adjustments in the Atlantic fishery had declared there are too many harvesters using too many boats and too many fishing processing plants (FRCC, 1997). All these people are competing for the same limited resource, and individuals race to catch the quota as much as possible. The replacement rules were set in place with the intention to stabilize fleets and ensure that an appropriate number have a chance to take a reasonable share of the resource[30]. In some fisheries replacement rules may limit competition between fleets.

Policy on capacity management

The control of fishing effort and vessel capacity has been a goal in Canada and internationally for fisheries management. The harvesting capacity has been long standing problem in all sectors in Canada, and overcapacity has resulted in non-viable fishing enterprises, low and

[29] See ref. 28

[30] See ref. 28

unstable income levels, low vessel utilization rates and an inability to attract and retain skilled crew (FIRI, 2006). There has been a decrease in registered vessels in the Canadian offshore fleets, but the accumulation of effective effort is due to the technological improvements in the fleets (FRCC, 1997). Canada is a member of the FAOs International Plan of Action on the Management of Fishing Capacity, and FAO has taken the lead in developing international policies and guidelines for the conservation of the resources. In the groundfish fishery, there have been several adjustment programs, including the Core License Policy which was introduced in 1995. This policy does not allow increment in harvesting when there is a new fishery opened or an existing fishery has expanded[31].

Safety at sea

In the Atlantic fisheries safety at sea is a growing concern Canada transport and other provincial agencies have been responsible for health and safety in the work place by developing more stringent rules and training[32]. All the vessels must meet safety standards, minimum stability requirements and should provide accommodation for the crew (Parsons, 1998).

The Australian Northern Prawn Fishery

The Northern Prawn Fishery (NPF) is located off Australian north coast and covers an area approximately 800 000 square km. The fishery targets nine commercial species of prawn, and squid as opportunistic target species along with scallops and bugs (Newby *et al.,* 2004). The fishery was established commercially in the 1960s, the tiger prawn and the banana prawn fishery accounting for 80 % of the commercial prawn species landings (Kompas *et al.*, 2003). The prawn fishery is divided into two main seasons, the daylight time fishing season targeting schooling banana prawns and night time fishing tiger prawn (Newby *et al.*, 2004). The NPF is regarded as the most valuable Australian commercial fishery (Jarret, undated).

[31] See ref. 28

[32] See ref. 28

The management of the NPF has been developed to address the issues of fishing effort levels and biological sustainability issues and also other objective for the management is the economic efficiency of the fleet (Kompas *et al.,* 2003). The Northern Prawn Fishery Management Plan of 1995 currently manages the NPF and is based on the limited entry and input controls, the input controls are the number of trawlers that may fish in the fishery, the size of the trawler used for fishing and the power of the main engine (Jarret, undated). The fishery has been regulated by limited entry since 1977 to prevent overharvesting, restricting the number of vessel in the fishery (Kompas *et al.*, 2003). The limited entry was revised in 1980 and was implemented under three year management plan, this plan proved to be ineffective because of replacement of old fishing vessels with new vessels which reduce the effectiveness of the management plan. In accordance with the increasing fishing effort Northern Prawn Management Advisory Committee (NORMAC) was formed in 1984, NORMAC introduced management plan class A units and class B. In the management plan introduced, a vessel required one class A unit for each cubic meter of hull volume and each kilowatt of engine power, while class B units limited the number of vessels licensed to operate in the fishery (Newby *et al.*, 2004).

Even then the stock of the brown prawn continued to decline, the failure of the limited entry policy to control expansion of fishing capacity and effort led to introduction of the unitization system for the rating of each vessel, and to hold increment in fishing capacity through boat replacement restrictions (Jarret, undated). The boat replacement policy was introduced in 1985, designed to reduce capacity of the fishing fleet. Upon this policy vessel owners wishing to improve their vessels or want to use new vessel were required to surrender A-units equal to the number of A-units of the upgraded vessel. The vessel owners were also required to acquire A-units from the license holders and prevent capacity increase within the existing fleet (Kompas *et al.,* 2003). According to Newby *et al.* (2004), the vessel replacement policy required the vessel owners to surrender two class B units for a new vessel of any size. Later the policy was revised and the vessel owners wishing to upgrade or introduce a new vessel were obliged to surrender class A-units and the vessel license so that at least the other vessel is removed from the fishery.

The vessel replacement and restrictions on the vessel length and engine power have been used to supplement the limited licensing in Australia. These supplementary controls proved to be

effective in restraining fishing effort but vessel replacement in some areas adversely affected efficiency[33]. Through the boat replacement policy east coast trawlers were discouraged to improve to more powerful vessels. Upon purchasing new vessel owners were required to surrender one additional license upon upgrading. It was referred to as two for one replacement policy. Although it was effective in slowing the rate of increase in fishing power, it had effect of increasing the average age of the fleet (O'Neill *et al.*, 2003). It was also argued that the fishing power of an average fishing vessel in the fleet is continuing to increase due to technological advances in fishing gear and vessel performance, navigation systems and telecommunications. A new system of management in the NPF which is based on gear was implemented in 1990s. It was to replace the unitization system which had been ineffective due to the technology creep, innovation in trawler designs and engine configurations. In addition legislators had been unable to enforce the rules on boat size and engine horsepower, thus resulting in uncontrollable effort creep[34].

A suitable management system

Replacement guidelines

The fishing vessel replacement policy has been implemented in Canada and Australia with intentions of using them as a management tool to reduce harvesting capacity and limit competition between various fleets. In the South African fishing industry context, it takes us back to the research statement, where South Africa does not have documented guidelines in place for the changing or replacement of fishing vessels. South Africa needs to develop and document guidelines on fishing vessel replacement which may address administrative issues as well as vessel issues amongst the right holders. If South African fishing authorities wishing to develop fishing vessel guidelines should take a note of Levelton saying about vessel replacement, which he states:

> "*Replacement guidelines should not be overly rigid and not the same for all fisheries, even on a relative basis. A balance must be struck between permitting technological*

[33] http://www.fao.org/docrep/005/AC750E/AC750E11.htm. accessed 25 September 2009

[34] http://www.fao.org/docrep/005/y2498e/y2498e0a.htm. Accessed 25 September 2009

increase but controlling it so that it does not get out of hand. The management objective for each fishery must take active account of the technological and associated economic and biological consequences of vessel replacement allowances" (Levelton, 1981).

The vessel replacement policy in Canada has been reviewed more than three times, and also in recent years it has been supplemented with other vessel replacement principles. According to FIRI (2006) this has made the policy administratively complex system of rules that are largely ineffective. The fisheries in both countries used as cases in this study have different fisheries compared to South African fisheries. The South African authorities could develop a very simple and non-complex policy by taking into account these countries policies and relating to South African fisheries.

Firstly, putting vessel guidelines in the South African fisheries may address administrative issues as well as vessel issues amongst right holders. Development of a simple understandable policy may bring less administrative work upon the processing of vessel change requests. The fishing replacement guidelines can improve a system of allowing vessel changes among right holders, as in the Newfoundland ground fishery where number of license holders wishing to replace their vessels has decrease through replacement guidelines.

The fishing replacement guidelines have been considered as very efficient in limiting harvesting capacity. In the South African fishing industry some of the fisheries are facing the problem of overcapacity, and regulations currently in place range from input and output controls to temporary closed areas and also Marine Protected Areas (MPAs). According to King (2007), in a fishery without a replacement policy or restriction, fishers tend to replace older vessel with larger, more efficient vessels resulting in the increase of fishing effort and yet on the other hand, not allowing the vessels to be replaced may result in an increase of an average age and inefficiency of vessels and with operations conducted in unsafe boats.

In terms of capacity management, vessel replacement and license limitations in Canada have been inefficient in tackling the increase of harvesting capacity but in Australia the system has proved to be efficient. The fishing replacement principle in the Canada which states: "*Not increase (and preferably reduce) overall harvesting capacity"* This principle could be the

answer in increasing overcapacity especially in Total Allowable Effort (TAE) fisheries in South Africa.

The issue of sea safety has been important in these two countries. In Canada the boat license holders had to abide to the principle which states "*Not compromise safety and be consistent with the policies and regulations of other agencies responsible for vessel safety".* According to FIRI (2006) this principle has led to economic unviable and poor designs of the Canadian fleet. The boat builders had to build larger boats which are more stable at sea, good for safety but the boats are very slow and consume more fuel. Upon this problem faced by Canadian fleet, South Africa could at the same combine together the safety principle with the economic viability principle which states " *Contribute to improved economic viability and not generate pressures for expanded allocations".* These combinations could alert boat makers to improve their designs taking into account the economic viability and safety of the fishing vessels.

The fishing vessel replacement guidelines in these fishing nations had more or less the same objective, but they have not been successful as they were intended to. In Canada the guideline have inefficient and in Australia they have been successful because these nations have different fisheries in both biological and economic terms. South Africa should take into consideration biology, economic and political issues upon developing and implementing of the fishing vessel guidelines.

Alternative management system

The ITQ system

In top of the fishing replacement guidelines that these fishing nations have implemented, they also implemented individual transferable quotas (ITQs). The ITQs had brought effectiveness in Canada supplementing the replacement rules, as it is the same case in Australia.

The individual transferable quotas are a form of property rights that have commonly used around the world. The ITQs have been implemented in several fishing nations such as New Zealand, Chile, Canada, Iceland and Greenland (Arnason, 2005). The ITQs are a type of rights based management in fisheries in which are enforce and allocated in the form of access and use rights, so ITQs allocate total allowable catch as an individual harvesting right

(Grafton, 1996). Arnason (2005) claims that ITQs can bring economic benefits as it has been experienced in Iceland where the system has led to increased economic efficiency. Grafton (1996) also assumes that there are benefits from this system such as reduction of excess capital employed in the fishery, the potential opportunities in alternative activities and the removal of excess harvesting capacity over a period of several years through adjustments. The system had been implemented in the above countries relating to a case in South African fishing industry and the ITQ system proved effective in both countries together with the replacement guidelines. There are number of measures applied in South Africa to sustainability of the stocks, ranging from closed season, MPAs, type of gear to be used and also prevention of harvesting juvenile's catches. The implementation of such system in South Africa could solve competition problems, overcapacity and economic efficiencies in most fisheries.

Although the ITQs had brought success in these nations, South Africa is a different case for the implementation of ITQs. The fishing authorities should take account of transformation, ownership and equity upon implementing ITQs. The ITQs may solve problems of "*race for fish"* and may provide substantial advantages of increased economic rent, reduced overcapitalization, improved safety and better product (Branch *et al.,* 2006). The problems with ITQs vary according to countries policies and objectives. In South Africa ITQs could reverse the transformation of the fishing industry, where the large companies could buy out the developing small enterprises, and may create paper quotas. The ITQs are also associated with the loss of employment as fleets are reduced (Branch *et al.,* 2006). South Africa is currently facing high unemployment rate, then ITQs can cause more problems in the South African fishing industry but that can depend on particular fishery.

Chapter 7: Conclusions and recommendations

Introduction

The previous two chapters of the study deal with the analysis and findings as well as what can be learned from other fishing nations. As mentioned in the first chapter the study seeks to identify the main reasons *why the right holders change their fishing vessels* and *how often the right holders change these fishing vessels.* The study also focuses on what can be learned from the other fishing nations with fishing vessels replacement rules as a management tool. This chapter gives a brief description of the relevant issues in findings.

Conclusions

The replacement of fishing vessels in South Africa can be linked to theories of capacity management which were discussed extensively in chapter three. In the past three seasons the capacity of the fleet in the WCRL nearshore fishery has been stable in terms of number of vessels. The TAC in the WCRL nearshore has been determined largely by the entry and exit of the fishing vessels. Although the capacity in the WCRL nearshore fishery has been stable in terms of number of vessels, the fishing capacity can be increased through the vessel changes. The right holders in the WCRL nearshore fishery have been changing their current vessels seeking to utilize larger vessels. The claim is that larger vessels are safer and can withstand bad weather at sea. The larger vessels have greater capacity and are more efficient because they cover more fishing grounds and have a larger space for the labour crew. These larger vessels have contributed to the increased fishing capacity in the South African fleet as well as right holders introducing new vessels.

Reasons for changing of fishing vessels

Based on the findings of the study most right holders have changed from their current vessels through investments. These investments vary from joint ventures, shareholding and purchasing of new or old vessels from the established companies. The study reveals that the

fishers have shown development in their fishing enterprises as well as success in transformation of the South African fishing industry.

Upon right holders replacing their current fishing vessels, safety measures are taken into considerations. The South African fishing authority is very cautious for the safety of the staff and crew at sea. All the fishing vessels that are operating in South African waters undergo a safety test conducted by SAMSA. The WCRL nearshore fishery right holders provide the SAMSA certificate when they apply for a vessel replacement. Most of the right holders are more concerned with their safety at sea, so they apply for a change to larger and safer vessels.

The South African fishing industry is in the process of transformation, and most of the right holders do not own fishing vessels. This has led to problems that right holders rent fishing vessels from the established companies or individual vessel owners that are oversubscribed. When these vessels are oversubscribed they have to release other right holders to seek fishing vessels to harvest their remaining quotas. This has caused problems with right holders ending up not harvesting their full quotas.

The economic crisis has an influence in fishing replacement vessel of the South African fishing fleet. The rising fuel prices and also increased running costs of the vessels leave the vessel owners in a financial crisis. When the operating costs are very high the vessel owners do not want to go to sea. Sometimes the fishing vessels are broken and maintenance costs are expensive. The vessel owners end up releasing right holders to seek for vessels to harvest their remaining quotas. The financial difficulties amongst the fleets can be linked with the charter fee agreement between chartering parties. When the operating cost is very high the vessel owner will require a higher harvesting fee. The right holders then leave the expensive catch agreements for better offers to achieve cheaper harvesting costs.

The right holders also provide many other reasons upon changing their current vessels. These reasons may be that "*the fishing vessel is operating in another sector* that *the vessel owner is sick, that he is not fit to go to the sea* and that *right holder needs an additional vessel to harvest his quota due to low abundance of lobster in the area where the right holder is located"*.

How often do the right holders change their current harvesting vessels?

In the past three seasons investigated of 2006/2007, 2007/2008 and 2008/2009 in this study the number of right holders changing their vessels has decreased. The decrease in the number of right holders changing vessels is an indication of decreasing work load on the administration in processing vessel change applications. The decreasing number of right holders changing vessels also reveals that the right holders are more satisfied with the service of their current vessels as well as potential redistribution of access rights and fishing capital. Now the right holders have their own vessels.

The fishing vessel replacement guidelines

As stated earlier in the introductory chapter that South African fishing industry does not have fishing vessel replacement guidelines. The South African fishing authorities need to develop and document guidelines for fishing vessel changes. The study seeks the base in development of fishing vessels replacement guidelines if the South African fishing authority intends to introduce a policy. In the last chapter, two fishing nations; Canada and Australia have been used as cases in fishing vessel replacement policies. The vessel replacement guidelines have been used as management tool of fishing capacity in these nations, and have been considered very efficient.

In the WCRL nearshore fishery harvesting capacity, safety at sea and economic viability of the fleet have been linked with the fishing vessel replacement guidelines used in Canada. In both the WCRL fisheries, the offshore and the nearshore sector, they have a large number of industry players which leave the industry vulnerable to excess effort (BCMLE, 2006). In the WCRL nearshore fishery alone, the last three seasons access fishing rights were awarded to more than 820 individuals. In this fishery there are too many right holders and too many fishing vessels operating with numerous artisanal fishers who lost their original open access to the resource. The WCRL nearshore sector has more than 350 fishing boats in past three years from 2006 to 2009.

The changing of fishing vessels in the WCRL nearshore fishery contributes to the increasing fishing capacity. The right holders substitute their current fishing boats with larger and more efficient boats, resulting in an increased fishing effort (King, 2007). The increased size of the fishing vessels also corresponds with an increase in the power of the outboard motor of a fishing vessel as well. In the long run these larger vessels put pressure on the management due to their economic inefficiency to demand larger TACs. The WCRL nearshore fishery is a TAC-managed fishery, where fishers tend to overinvest in vessel improvements and in technology that may be the most efficient (Branch *et al.,* 2006). Use of the technological equipment such as Global Positioning System (GPS) and telecommunications by fishermen increase the effectiveness of the effort, where the GPS is used to set traps or nets in areas of high density more quickly. Fishermen communicate with each other to easily locate areas with high abundance of the fish stock (King, 2007). The WCRL nearshore fishery is managed with closed season, and the right holders will always race to fish as soon as possible before the closure of the season. The race for fish in this fishery leads to fishermen increasing the number of traps deployed in a single fishing trip.

Also other fisheries in South Africa face the issue of overcapacity which needs immediate attention. The Canadian guideline principle "*not increase (and preferably reduce) overall harvesting capacity"* has been linked with the capacity issue in the South African fishing industry in study.

In both fishing nations used as case, safety at sea it's a priority, as in South Africa. The guideline principle "*not compromise safety and be consistent with the policies and regulations of other agencies responsible for vessel safety",* has also in this study been linked with safety at sea issues. Most South African fishing right holders change their boats with safety concerns in mind, since they were using smaller boats. Lastly the issue of economic viability of the fleet is also been linked in this study with one of the Canadian guideline principles which states "*contribute to improved economic viability and not generate pressures for expanded allocations".* Most of the right holders change their fishing boats due to financial difficulties, such as rising fuel costs, broken boats and engines and increased operating costs.

The South African fishing authority needs to put in a place more specific fishing replacement restrictions. The three fishing vessels replacement guidelines of the Canadian fisheries above have been linked with these issues so as to develop a base for developing South African

policy. The fishing vessel replacement restrictions should be a place as a measure of fishing capacity in the WCRL fishery. Due to the large number of fishing vessels in the fishery vessel scrapping can be combined with guidelines to decrease the number of vessels. As in the Northern Prawn Fishery in Australia, with the introduction of new vessels in the fishery a license holder has to give up the previous vessel license, and in that way capacity is reduced.

In the fishing vessel replacement policy of Canada, two more replacement principles which state that "*not result in any changes in allocations, fleet shares or access"* and "*encourage the adoption of self adjustment"* have been linked with the capacity issue in WCRL fishery. This two principles focus on tackling the issue of right holders changing to larger and more efficient boats. The policy should be clear that upon changing a boat to a larger boat and expecting in the future to have a larger TAC is not possible, such that a right holder would have to adjust himself or herself by acquiring strategies to minimize operating costs and maximizing the resource rent from the fishery upon changing to a larger boat. The larger the fishing vessel the more costly it is for operations because of the increased horse power.

The alternative system is the introduction of ITQs. The ITQs allow maximum flexibility of access rights, the right holders are allowed to harvest a particular amount of the TAC and can transfer this right by leasing or selling (Branch *et al.,* 2006). In economic terms the ITQs enable right holders to catch more efficiently and improve the quality of the harvest to sell at best possible price. The ITQs also improve the safety at sea (BCMLE, 2006). The ITQs reduce overcapacity because they limit the competition within the fleets. The ITQs can solve economic and capacity issues.

According to Branch *et al.* (2006) ITQs encourages the less efficient fishers to sell their quotas to more efficient owners and leave the fishery, and thus reducing overcapacity. But when new right holders sell their quotas this contradicts the current fisheries policy in South Africa regarding transformation. The transformation in South African fishing industry is the main objective of the policy. The large vessel owners can buy the quotas from the small owners' enterprise, and they will often lose the ownership of quota and the access to the fishery. The Canadian replacement guidelines which states "*Be consistent with the objectives of the current licensing policy"* can be linked with these socio-political outcomes. In tackling this issue the transferability of the quotas should have restrictions such as temporary or permanent tradability, requirement of official approval of the transfer and as well as

maximum aggregation limits (BCLME, 2006). These restrictions could distort disadvantages of ITQs for socio-economic concerns.

In Canada and Australia the vessel replacement guidelines were supplemented with the introduction of ITQs. If South Africa was to use these fishing vessel guidelines and ITQs it should be noted that the fisheries in these countries are very different from South African fisheries and that approaches in implementing the guidelines are also different. Hence, there are lessons to be learnt from these two cases but the recipe cannot be copied directly.

References:

Arendse C. J., Govender A., and Branch G. M., 2007. Are closed seasons an effective means of increasing reproductive output? A per-recruit simulation using the limpet *Cymbula granatina* as a case history. Fisheries research 85, (93-100).

Arnason R., 2005. Property rights in fisheries: Iceland's experience with ITQs. *Reviews in Fish Biology and Fisheries.* 15:243-264.

Beddington J. R. *et al.,* 2007. Current problems in the management of marine fisheries. *Science*, volume 316:1713

Benguela Current Large Marine Ecosystem Programme (BCLME), 2005. Transformation in the marine fishing industries of the BCMLE countries. UCT, Feike, Enviro-fish Africa.

Benguela Current Large Marine Ecosystem Programme (BCLME), 2006. Micro-economic systems analysis of the BCLME commercial marine fisheries. UCT. Feike, Enviro-fish Africa.

Blaikie, N., 2000. *Designing social research, The logic anticipation*. Polity Press: Cambridge

Boopendranath M. R., 2007. Fishing capacity management. IFP Souvenir, *Central Institute of Fisheries Technology*, Kochi.

Branch A. T. *et al.*, 2006. Fleet dynamics and fishermen behavior: lessons for fisheries managers. *NRC Research Press. Can. J. Fish. Aquat. Sci*. 63: 1647-1668.

Branch G. M. and Clark B. M., 2006. Fish stocks and their management: The changing face of fisheries in South Africa. *Marine policy* 30 :3-17.

Branch T. A., Rutherford K. and Hilborn R., 2006. Replacing trip limits with individual

transferable quotas: implications for discarding. *Marine Policy:* 30: 281–292.

Brouwer S. L., 2005. West coast rock lobster fishery. Marine and coastal management, private bag x2 , Rogge Bay Tape Town.

Brouwer S. L., Groeneveld J. C. and Blows B., 2006. The effects of appendage loss on growth of South African west coast rock lobster *Jasus lalandii. Fisheries research:*78 (236-242).

Caddy J. F. and Cochrane K. L., 2001. A review of fisheries management past and present and some future perspectives for the third millennium. *Ocean and Coastal Management*. 44: 653-682

Charles, A. 2001,. *Sustainable Fishery System.* Blackwell Science Ltd, a Blackwell publishing Company.

Cockcroft A. C., *et al.,* 2008. Large-scale changes in the spatial distribution of South African West Coast rock lobsters: an overview. *African Journal of Marine Science*. 30(1): 149–159

Cockroft A. C. and Payne, A. I. L., 1999. A cautious fisheries management policy in South Africa: the fisheries for rock lobster. *Marine policy volume* 23, no. 6, (587-600).

Cockroft A. C. *et al.,* undated. Marine recreational fisheries in South Africa: Status and challenges. Evaluating Recreational Fisheries. Page 64.

Cunningham, S. and Greboval, D. 2001. Managing fishing capacity: A review of policy and technical issues, *FAO Fisheries Technical Paper* No. 409, FAO, Rome

DEAT, 2005, Marine and coastal management. Policy for the allocation and management of commercial fishing rights in the west coast rock lobster limited commercial fishery.

DEAT, 2005. Policy for the allocation and management of commercial fishing rights in the south coast rock lobster fishery

DEAT, Marine and coastal management. Marine Living Resources Act of 1998

FAO, 1999. International Plan of Action For Management of Fishing Capacity, Rome

FAO, 2002. A fishery managers guidebook. Management measures and their application. *FAO Fisheries Technical Paper*. No. 424. Rome.

FAO, 2004. Measuring and assessing capacity in fisheries: Basic concepts and management options. *FAO Fisheries Technical Paper*. No.433/1. Rome.

FAO, 2005. Economic Performance and Fishing Efficiency of Marine Capture Fisheries. *Fisheries Technical Paper* 482, Rome.

FAO, 2008. Fisheries management : 3. Managing fishing capacity. FAO *Technical Guidelines for Responsible Fisheries.* No 4, Supplement 3.FAO, Rome.

Feike Marine Regulatory Law and Environmental Management Advisers, 2006. IUU fishing in South Africa.

Feike natural resource management advisors, 2008. Feike news, November /December 2008. Fisheries aquaculture ecosystems.

Fisheries Resource Conservation Council (FRCC), 1997. A Groundfish Conservation. A report to the Minister of Fisheries and Oceans

Fishing Industry Renewal Initiative (FIR), 2006. Discussion Paper. Newfoundland and Labrador- Canada.

Grafton Q. R., 1996. Experiences with Individual Transferable Quotas: An overview. *The*

Canadian Journal of Economics. Vol. 29, Special Issue: Part 1. Pp 135-138.

Groeneveld J. C., Khanyile J. P., and Schoeman D. S, 2005. Escapement of the cape rock lobster (*Jasus lalandii)* through a mesh and entrance of commercial traps. *Fish. Bull.* 103:52-62

Hauck M. and Kroese M., 2006. Fisheries compliance in South Africa: a decade of challenges and reform 1994-2004. *Marine policy* 30:74-83.

Hauck M. and Sweijd N. A., 1999. A case study of abalone poaching in South Africa and its impacts on fisheries management. *ICES Journal of Marine Science*, 56: 1024-1032

Hersoug B. and Isaacs M., 2001. Its all about money! Implementation of South Africa`s new fisheries policy. Land reform and agrarian change in Southern Africa: school of government, University of Cape Town.

Huang, H.W. and Chuang , C. T., 2010. Fishing capacity management in Taiwan: Experiences and prospects. *Marine Policy*, 34: 70-76.

Isaacs M. *et al*., 2007. Has reforming South African fisheries contributed to wealth redistribution and poverty alleviation? *Ocean & Coastal Management* 50, 301–313

Isaacs M., 2006. Small-scale fisheries reform: Expectations, hopes and dreams of "a better life". *Marine policy* 30 (51-59).

Jarret A. E., (undated). Initial allocation of unitization (boat/engine units) as harvesting rights in Australia's northern prawn fishery. Pro-Fish PTY Ltd.

Jensen, C. L., 2002. Reduction of the fishing capacity in "common pool" fisheries. *Marine Policy* 26: 155-158

Johnston R. S. J., and Butterworth D.S., 2005. Evolution of operational management

procedures for the South African West Coast Rock Lobster (*Jasus lalandii)* fishery. *New Zealand journal of marine and freshwater research*, volume 39 (687-702)

Joubert A. R. *et al.,* 2008. Allocating fishing rights in South Africa: a participatory approach. *Fisheries Management and Ecology*, 15, 27-37

Joubert A. R. undated. Fishing rights and small scale fishers: An evaluation of the allocation process and the utilization of fishing rights in Southern Africa.

King M., 2007. *Fisheries biology, Assessment and Management*, 2nd edition. Blackwell Publishing

Kirkley, J. E. and Squires, D., 2003. Capacity and capacity utilization. In : Pascoe, S. and Greboval, D., 2003. Measuring fishing capacity. *FAO Fisheries Technical Paper No 445*. FAO, Rome.

Kjærsgaard, J. 2010. Quest for appropriate overcapacity in the fisheries industry. *Socio-Economic Planning Sciences*:1-10

Kompas *et al*., 2003. Technical efficiency effects of input controls: evidence from the Australia's banana prawn fishery. Australian National University, Economics and Environmental Network Working Paper.

Levelton C. R. (1981). Toward an Atlantic Coast Commercial Fisheries Licensing System: A report prepared for the Department of Fisheries and Oceans, Government of Canada. In : Parsons, C., 1998. Fishing vessels replacement regulations in the Newfoundland fishery: Implications for the future. A major report submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree of Master of Marine Studies, Fisheries Resource Management. Fisheries and Marine Institute of Memorial University of Newfoundland.

Martin R. and Nielsen R. J., undated. Creatin of a new fisheries policy in South Africa: The development process and achievements.

Mather D. J., 2004. Fishing Rights, Redistribution and Policy: The South African Commercial T.A.C: Fisheries. Phd thesis University of Rhodes

Mayfield S. and Branch G. M., 2000. Interrelations among rock lobsters, sea urchins, and juvenile abalone: implications for community management. *Canada Journal of Fish and Aquatic Science*. Volume 57.

MCM., 1997. White Paper: Marine Fisheries Policy for South Africa DEAT.

MCM, 2005. General policy on the allocation and management of long term commercial fishing rights: 2005

MCM, 2006. Current Status of Marine Living Resources Managed DEAT.

MCM., 2007. Status of marine living resources 2006-2007. DEAT

MCM., 2008. Status of marine living resources 2007-2008. DEAT.

Mellville-Smith R. and van Sittert L., 2005. Historical commercial West Coast Rock Lobster *Jasus lalandii* landings in South African waters. *African Journal of Marine Science*. 27:1(33-44).

Metzner, R. 2005. Fishing aspirations and fishing capacity: Two key management issues. *Fisheries Policy and Planning Division*, Fisheries Department, FAO. Rome.

Meurot, E., 1986. Fishing fleet replacement: The French policy from 1945 to 1983. Butterworth and Co.(Publishers) Ltd.

Mu Y. T. *et al.* 2007. A qualitative appraisal of China's efforts in fishing capacity management. *Ocean and Coastal Sea Research. Journal of Ocean University of China*. Volume 6. No. 1.

Murray G. *et al,*. 2008. Lessons from a Multi-Scale Historical Reconstruction of Newfoundland and Labrador Fisheries. *Coastal Management*, 36:81–108.

Namey E, Guest G, Thairu L, Johnson L., 2007. Data reduction techniques for large qualitative data sets.

Newby J. *et al.,*2004. Structural adjustment in Australian fisheries, ABARE *e*Report 04.17 Prepared for the Fisheries Resources Research Fund, Canberra, November.

Nielsen R. J. and Hara M. 2006. Transformation of South African industrial fisheries. *Marine Policy*. 30: 43-50

O'Neill M. F., *et al,* 2003. Comparison of relative fishing power between different sectors of the Queensland trawl fishery, Australia. *Fisheries Research* 65:309-321.

Parsons, C., 1998. Fishing vessels replacement regulations in the Newfoundland fishery: Implications for the future. A major report submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree of Master of Marine Studies, Fisheries Resource Management. Fisheries and Marine Institute of Memorial University of Newfoundland.

Pascoe, S. 2007. Capacity analysis and Fisheries Policy: Theory versus Practice. *Marine Resource Economics*, Volume 22: 83-87

Pascoe, S., D., Tingley, and S. Mardle, 2002. Appraisal of alternative policy instruments to regulate fishing capacity (final report). ER0102/6, Economic Research Project.

Pitcher J. T. *et al*., 2002. A synopsis of Canadian fisheries. Fisheries Center, UBC.

Ponte S. and van Sittert L., 2007. The chimera of redistribution in post-apartheid South Africa: 'Black Economic Empowerment' (BEE) in industrial fisheries. *African*

Affairs, 106/424, 437-462

Poverty Reduction and Environmental Management (PREM), An Institute for Environmental Studies 2005. PREM Policy Brief no. 6

Sauer W. H. H *et al.,* 2003. An economic and sectoral study of the South African profiles. Volume 2. Report prepared for MCM by Rhodes University.

Schrank E. W., 2005. The Newfoundland fishery: ten years after the moratorium. *Marine Policy* 29:407–420

Silverman, D., 2005. *Doing qualitative research*. Second edition, Sage, London.

South African National Spatial Biodiversity Assessment (NSBA).2004 Technical Report Volume 4: Marine Component

Stewart T. J. *et al.,* 2009. MCDA Framework for Fishing Rights Allocation

Tai S. Y. and Heaps T.,1996. Dynamics and Alternative Management Policies for the Small Pelagic Fisheries of Northwest Peninsular Malaysia. *Marine Resource Economics*, Volume 11: 85–103

United Nations Convection On The Law Of The Sea (UNCLOS) 1982.

van Sittert L. *et al.,* 2006. Benchmarking the first decade of post-apartheid fisheries reform South Africa. *Marine Policy* 30: 96-110

van Sittert L., 2001. 'To live poor life': Remembering the Hottentots Huisie Squatter Fishery, Social History, Taylor & Francis, Ltd, 26: No. 1

Yu, H. and Yu, Y., 2008. Fishing capacity management in China: Theoretic and practical perspectives. *Marine Policy* 32: 351–359.

Websites:

1. http://en.wikipedia.org/wiki/Data _collection
2. http://en.wikipedia.org/wiki/Quantitative_research
3. http://www.colmr.research.va.gov/mgmt_research_in_va/methodology/qualitative_research.cfm#4
4. http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/vessel-bateau/index-eng.htm
5. http://www.fao.org/docrep/005/AC750E/AC750E11.htm.
6. http://www.fao.org/docrep/005/v9878e/v9878e00.HTM#6
7. http://www.fao.org/docrep/005/v9878e/v9878e00.HTM#7
8. http://www.fao.org/docrep/005/y2498e/y2498e0a.htm.
9. http://www.fao.org/docrep/006/Y4849E/y4849e05.htm#bm05.3.1
10. http://www.fao.org/fishery/topic/14856/en
11. http://www.feike.co.za/southCoastRockLobster.html
12. http://www.feike.co.za/squid.html:
13. http://www.feike.co.za/traditionalLineFish.html:
14. http://www.feike.co.za/traditionalLineFish.html:
15. http:www.environmental.gov.za/branches/marinecoastalareaswork/vesseltours/Lillianngoyi.html.
16. www.tradersafrica.com/articles.asp?artleid=%7b0399af89-871d-4311-a88f

Annexure: Reasons given by the right holders when changing vessels

Investments

The right holder has bought a new vessel.

The applicant has purchased his own vessel, which would be more viable to operate in the sector

Applicant bought his own boat, wanted to catch his own quota and had verbal agreement of 10% for entire catch and the agreement was broken when he was 20% when catch was completed.

The current vessel has been sold, and the applicant bought his own vessel for the 2006/07 season.

The applicant has bought the 1% share of the replacement vessel, and the current vessel is smaller.

The applicant purchased 33,3% of the shares in the vessel.

The applicant have join a joint venture of three individuals, and bought a vessel Stranger, and yet the current vessel is in many fishing sectors like, linefish and abalone harvesting and did not have WCRL harvesting gear

The applicant bought 1% share on the replacement vessel and it is bigger than the current vessel.

The applicant's father and uncle have bought the vessel Blue Chip he wants to move to it

The applicant states that he bought himself a new vessel and would like utilize his own unnamed vessel

The applicant will be a share holder with Mr Thompson in their company

The nominated vessel has been sold and now the applicant has bought his vessel for the future fishing of his quota.

The vessel Brave Heart has got to many commitments, the applicant has 10 % shareholding on the replacement vessel Oceans 12. (the vessel is not currently on the WCRL and the The applicant have join a joint venture of three individuals, and bought a vessel Stranger, and yet the current vessel is in many fishing sectors like, linefish and abalone harvesting and did not have WCRL harvesting gear

Engine breakdown and vessels under repairs

The vessel Trust me has continuous engine breakdowns which resulted in their allocation not to be caught

The nominated vessel broke down and now it is un-repairable

The nominated vessel has continuous engine breakdowns which makes it difficult to catch their fish

The nominated vessel has suffered structural damage when it fell off the trailer and will take time to be repaired

The nominated vessel was in an accident, the boat was anchor in the harbor (Slip), during the night, the sea got rough and the boat got damaged

The applicants boat engine is broke and is not in financial position for necessary repairs.

The current vessel is irrepairable and not sea worthy, and was involved in accident

The current vessel is irrepairable and not sea worthy, and was involved in accident

The applicants vessel had some trouble with the buoyancy.

The owner of the vessel Small Fry is scrapping the boat, as it is broken beyond repairs. The applicant is also willing to buy 10% shareholding on the vessel.

The current vessel is unable to go to the sea, it is sea unworthy, and the vessel owner is not in the position to repair the vessel immediately.

Safety

The replacement vessel is bigger than the nominated vessel but substantially safer

The applicant had an accident at sea with the nominated vessel and now wants to change to the replacement vessel

The applicant wants a bigger boat to catch his allocation

The nominated vessel is small with 4m.while the replacement vessel is slightly bigger with 5metres

The nominated vessel is 5 meters in length and the applicant can no longer use the slipway as it has been repaired to sail from milers point, it is not safe for him to use smaller boat

The old vessel does not have bouyancy certificate as required by SAMSA, the vessel is unsafe.

The old vessel is traditional unsafe and the weather conditions in his region wouldn't allow him to reach the fishing ground. And the applicant feels like he wont get all his allocation with the current vessel.

The current vessel is unpractical and unsafe, and the fishing grounds are 30 -40 km away.

The current vessel is too small to handle the bad weather they are experiencing in their area, and the applicant is in the process of buying 20% of the Shakes vessels.

The previous vessel is too small and unsafe, there is no working space for the skipper, trawl man and the right holders and this vessel is going to utilized in the recreational purposes.

Oversubscription

The nominated vessel is over subscribed

The nominated vessel Chimaera is over subscribed and she fears that her qouta will not be harvested

The nominated vessel is not available to harvest her quota this season

The applicant has not been satisfied with the vessel owner as the vessel owner has not made the vessel available

The nomianted vessel has many Right Holders outstanding to catch their quotas.

The nominated vessel has no capacity to harvest the volume of all the boat nominees in one season; the owner is releasing some of its right holders.

The current vessel Lady Alice does not have the capacity to harvest the volume of all the boat nominees in one season, so it releases some of its right holders.

The Vessel Belinda does not have enough capacity to harvest all the volume for its nominees in one season, so it had to release some of the right holders.

The owner of the nominated vessel (Sheron) will not be able to accommodate to fish WCRL that season

The current vessel does not have enough capacity to harvest the volume of all the boat nominees fishing rights in one season.

The applicant feels like the current vessel have some outstanding obligations before it harvest his quota, and will not be able to catch his quota as the season is nearly over.

Financial problems

Cannot afford to use own boat to haverst his lobster

Cannot afford to maintain his boat, so rather he transfer his Rights to another boat

The vessel has been sold due to financial difficulties

The applicant cannot afford to go to sea with his own vessel, it costs him a lot

The vessel owner released the applicant because of limited quota and the fuel costs would be very high while the catch will not be enough to cover the costs

The vessel owner has refused to go to sea as the fuel costs are high.

The nominated vessel is costing a lot of money for repairs and maintenance so it is expensive to maintain it

The maintenance and to upkeep the boat is too expensive therefore had to sell the boat

The nominated vessel was collected by the clerk of the court due to financial situation, the case was lost and vessel sold, so they need another vessel to catch

The current vessel was longer than 5.3 m and the applicant cannot afford the VMS and his two motors were stolen.

Charter agreement breakdown

The previous vessels owner and the applicant had disagreed on an agreement, and the applicant does want to continue with him.

The vessel owner of the nominated vessel does not want quota holder to use the vessel anymore.

The applicant is having problems with the skipper, who is unreliable and un-contactable.

The applicant had problems with the current vessel by refusing to catch his quota on different harbor

The applicant wishes to change because there was breakdown in the relationship between him and the original vessel owner

Catch shortage

The nominated vessel could not catch his 2007/2008 allocation and therefore want to change to replacement vessel

Previous nominated vessel could not catch his 2007/2008 crayfish

The nominated vessel had trouble catching their 2007/2008

The nominated vessel has not landed one ton of their allocation since they got their permit

Nominated vessel did catch the full allocation previously, so wants a more reliable vessel

The nominated vessel only caught 150 kg's of the 750 kg's 2007/08 quota and the applicant feels that it's unfair

The nominated vessel did not harvest his allocation for previous 2 seasons, so the replacement vessel is better

The nominated vessel has more than 1 right holders and the vessel could not catch all the crayfish for previous season, the replacement vessel will be able to catch

The Right Holders on Grace from start all lobster have not been caught, last season over a ton has been left in the sea, that is why they want to move to other vessel

The nominated vessel has not been catching his allocation on time for the past 3 years and so would like to change to replacement vessel

The applicants nominated vessel did not finish his quota for the season 2003 and 2004, and has bought his own boat.

The applicants have not catch their whole quota and approached attorneys for their quota which was not caught reason being the company provided boats late in the season of 2003 and 2004.

The vessel owners never made any attempt to harvest applicants quota, the owners are in Cape Town and never sent the vessel to Gaansbaai for harvesting.

Charter fee

The nominated vessel gave him problems and now wants the replacement vessel to catch his lobster at a cheaper rate

The replacement vessel charges less for a kg than the nominated vessel ,so this is economically viable for him

The charging fee for the replacement vessel is R20.00 per kg than the previous vessel

The applicant wants to increase his profit, and the charter fee on nominated vessel is too high. The current vessel has not made any attempts to harvest the allocation of the applicant during season 2005/07 which resulted in loss of income..

The current vessel charter fee is too high; the catching agreement has expired at the end of 2005/06 allocation.

The catch cost was becoming a big problem, plus the relationship between the owner and the applicant was at the point of not working together.

The charter fee for the nominated vessel is too high therefore right holders as had no alternative but to source an alternative vessel.

The charter fee for the nominated vessel is too high therefore right holders as had no alternative but to source an alternative vessel, the applicant is acting on behalf of Mr. Vuyani White.

The owner of the vessel never made any effort to harvest applicant quota, besides the owner mentioned that its not worth it to go to Gansbaai to harvest for one persons quota. He also got abalone quota located to his vessel and wants to concentrate on the harvesting of abalone.

The vessel owner has failed to harvest the cray fish; the applicant has entered a cheaper and more reliable catching agreement.

Miscellaneous reasons

The nominated vessel "Amber" was stolen

Additional vessel assisting the nominated vessel to harvest their full allocation

The owner of the nominated vessel advised the applicant that it would be best for her to utilise another vessel

The owner of the nominated decided to withdraw the vessel Barrier Reef from the WCRL sector

The Sophia is currently operational in the sector and meets all the applicants is looking for

The client wants to change to a more reliable vessel owner that will catch his fish, had lots of problems with the nominated vessel owner

The owner of the nominated vessel advised the applicant to utilize a second boat to catch his lobster

The nominated vessel is not giving the applicant good service

The applicant did not renew the catching agreement for the 2007/2008 season.

The service that the applicant is getting from the owner of the nominated vessel is very bad and she wish to transfer her right to the replacement vessel

The reason for an additional vessel is low catch rates for WCRL, currently experienced by vessels fishing WCRL in both area 7 and 8 and consolidation catch effort

The applicant has no contact with the nominated vessel

The applicant did not have a vessel of himself and had to use the nominated vessel during the 2001-2002 season to undertake limited commercial fishing of WCRL

The nominated vessel cannot guarantee to fulfill his obligations as he is struggling to catch his own quota.

The current vessel is active on the line fish sector.

The vessel owner has long been sick with (degenerate spondylosis with L-5 spondylolithesis), the doctor advised him not to go the sea.

The current vessel is active in the line-sector fishery, the Greystone vessel is an economical viable.

The applicant is scared that the previous boat owner is not complying with the permit conditions, and afraid that he might lose his quota with such behavior.