MANAGING NAMIBIA'S MARINE FISHERIES: OPTIMAL RESOURCE USE AND NATIONAL DEVELOPMENT OBJECTIVES

by

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ABSTRACT

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Prior to independence, Namibia's marine fisheries had suffered over-fishing, typical of open access exploitation of a common pool resource where there is excess demand. The Namibian Government's policy objectives seek optimal sustainable use of Namibia's fisheries resources and a substantial increase for Namibians of benefit from these resources.

In assessing the appropriateness of Namibia's fisheries management system for meeting these objectives, state involvement in the management of the resource is considered, the biological and ecological constraints of the resource are examined and the degree to which national management of fisheries is nested in a global system of fisheries governance is defined.

Empirical evidence establishes the critical importance of successfully managing these resources through environmental shocks and the importance for the industry of sufficient economic flexibility, often hindered by overcapacity, to cope with those shocks. Even at low, sub-optimal biomass levels, evidence suggests that substantial resource rent accrues to industry as abnormal profit, or finances overcapacity. Government attempts to redistribute benefit from the resource have been only partly successful.

These findings establish the importance of state intervention to ensure that capacity is reduced as close as possible to a bio-economic optimal level, thus maximising resource rent. Collection by the state of a larger proportion of available resource rent would make it less possible for abnormal profits to be earned and make rent less available for financing over-capacity. The additional state finance, representing benefit from the resource, could be directed by the state towards more effective usage in the development process. The management of Namibia's marine fisheries will best be achieved by working towards a system of co-management between the state and industry, providing a framework for nested institutions tailored to the conditions of each fishery, in a joint endeavour to generate a socially optimal use of the resource.

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GLOSSARY

anadromous species	fish species that go up rivers from the sea to spawn, such as salmon.
carapace length	the length of the main part of the body of a lobster from the eyes to the beginning of the tail
catadromous species	fish species that live in fresh water but go into the sea to spawn.
cod-end	the part of the trawl-net where the fish collect during trawling
demersal	living on or near the sea bed
diatomaceous	having to do with diatoms which are any one of numerous microscopic one-celled, aquatic algae that have hard shells composed mostly of silica. These float free in the sea, and upon death, settle on the sea bed contributing to the rich organic mud
dumping	disposing of fish at sea that have been caught already, usually to have a higher value catch counted against quota
highgrading	dumping of smaller fish in favour of larger, higher value fish
isobath	a line on a map connecting points that have the same depth from the surface of a body of water
pelagic	living on or near the sea surface away from the shore
phytoplankton	microscopic plants, usually algae, of a body of water which form the bottom of the marine food chain
purse seiner	a fishing net used in pelagic fisheries, which is pulled around a school of fish until the ends are brought together, the bottom then being drawn together under the fish to close as a purse
zooplankton	microscopic animals which feed on the phytoplankton and are next on the food chain

ACRONYMS

CPR	common pool resource
CPUE	catch per unit of effort
EEZ	exclusive economic zone
EFZ	exclusive fishing zone
ENSO	El Niño Southern Oscillation
FAO	United Nations Food and Agricultural Organisation
ICJ	International Court of Justice
ICSEAF	International Commission for South East Atlantic Fisheries
IQ	individual quotas
ITQ	individual transferable quotas
LOSC	United Nations Law of the Sea Convention (1982)
MFMR	Ministry Fisheries and Marine Resource
MSY	maximum sustainable level
MTI	Ministry of Trade and Industry
N$	Namibian dollar
nm	nautical mile
PLAN	People's Liberation Army of Namibia
SADC	Southern African Development Community
SST	sea surface temperature
SWA	South West Africa
SWAPO	South West Africa Peoples Organisation
TAC	total allowable catch
UNCLOS	United Nations Conference on the Law of the Sea
UNCN	United Nations Council for Namibia
UNGA	United Nations General Assembly
UNSC	United Nations Security Council

Chapter One

NAMIBIA'S FISHERIES:
THE CHALLENGE TO MANAGEMENT

At the time of Namibia's independence in 1990, the new state inherited a fisheries sector in which the most valuable commercial species had been over-fished and were in a depleted state. The fisheries were dominated by foreign fishing fleets. The locally based fishing industry consisted of a relatively small number of local fishing companies largely owned and controlled by 'whites', reflecting the apartheid system imposed by the South African administration over several decades.

The fisheries sector has the possibility of playing a major role in Namibia's development process because of the natural productivity of the country's Benguela marine ecosystem. The primary production of the marine ecosystem, that is, the production of phytoplankton and zooplankton, is particularly high. The ecosystem is thus able to support large shoals of fish further up the food chain. In a sense Namibia's seas are its green pastures. Renewable land-based resources in Namibia are limited due to a very arid climate. The fish stocks are a renewable resource of great potential value to the country and are playing an increasingly important role in Namibia's economic development. Namibia's catch per head of population was approximately 434 kilograms in 1994, at a time when the biomass of the commercial stocks was still relatively low. Only one other major fishing nation, Iceland, has a per capita catch larger than that of Namibia.

Namibia's fisheries have a pivotal role to play in the development of the country, but to fulfil that role, the fish stocks need to be given the opportunity to recover (Ch.2, 2) so that the fishery can operate at somewhere near its optimal level. In addition, the benefits of the resource need to be directed more substantially towards Namibians (Ch.2, 5). The post-independence Namibian Government clearly saw the potential for making more equitable the distribution of benefit from this resource through the regulation of access to the fisheries (Namibia, 1991a). It also recognised the importance of regulating access to the fish stocks so as to allow the stocks to recover in the interests

of higher productivity and revenue generation. It is important for the future development of Namibia that the marine fisheries are well managed so that their full potential contribution to the health and prosperity of its people can be fully realised.

Effective management requires that the fishery needs to be run at a level that approximates, as closely as possible, the optimal economic level (Ch3, 1.2.2). In Namibia it must also address the distribution of benefit from the resource, particularly in view of Namibia's dubious distinction of having one of the most skewed distributions of wealth in Africa.

In the few short years since Namibia's independence in 1990, the Namibian Government, through its Ministry of Fisheries and Marine Resources (MFMR), has put an end to a fishing free-for-all taking place off its coast, established a creditable measure of control of the fisheries and now earns net revenue from this resource (Ch6). Extra finances have been committed to scientific research in order to understand better the fisheries resources and the ecosystem in which they are found. The MFMR has made good use of foreign technical assistance and has improved the collection and analysis of data, consultation with the industry and the involvement of industry in scientific discussion.

The MFMR has been praised in the popular fisheries media internationally for what it has achieved in the fisheries sector since independence. However, despite many positive aspects of post-1990 management practice, fundamental problems remain in managing the regeneration of the stocks (Ch7) and the distribution of benefit, despite the allocation of quotas to companies that are largely Namibian-owned (Ch8). This calls into question the unconditional claim to good management reflected in the media, particularly in that these problems place in jeopardy the long term viability of the resource and undermine the policy position of government to use the resource to address the highly skewed distribution of wealth.

Successful management of large marine fisheries has eluded fisheries managers around the world. Attempts at effective management of such fisheries are a relatively recent phenomenon due to the historic and widespread belief that marine fish stocks were inexhaustible (Ch5, 1.1) and because of the lack of jurisdiction over most major fishing grounds before the advent of extended jurisdiction which occurred, in the main, since the beginning of the 1970s (Anderson 1977, pxv).

There has been extensive debate in the literature as to how the array of problems that arises in fisheries management can best be overcome. The debate ranges across disciplines, positions often posited as alternatives to each other rather than as complementary, as many of them tend to be. The complexity of the problem calls for a relatively complex set of rules to produce the most successful outcome (Hannesson 1993, p. v.; Anderson 1977, p. xvii).

This thesis examines the management of Namibia's fisheries in the light of this debate. It examines the outcome of the management process to see the extent to which the main broad objectives of the Government's fisheries policy, with which I concur, have been fulfilled. It concludes with an emphasis on the importance of a co-management approach to the fisheries sector, in which adaptive management techniques are used in managing the fisheries in conditions of variability and considerable ignorance of the ecosystem and its species.

This thesis is divided into two parts. The first part, consisting of Chapters 2-4, identifies and theorises the problems of the Namibian fisheries sector and the second part, Chapters 5-8, focuses on Namibia's post-independence management of its fish stocks. A concluding chapter draws together the lessons learnt and makes recommendations for the future management of the fisheries.

1. Namibia, its history and political economy

Namibia lies along the Atlantic seaboard in the south western part of Africa. It is bordered by Angola and Zambia to the north, Botswana to the east, South Africa to the south and it touches Zimbabwe in the north east (see Figure 1). It has an area of 824 296 square kilometres, or 318 261 square miles (Wellington 1967, p1) nearly four times the size of the United Kingdom but with a population of about 1.5 million people. Namibia has a coastline of some 1500 kilometres.

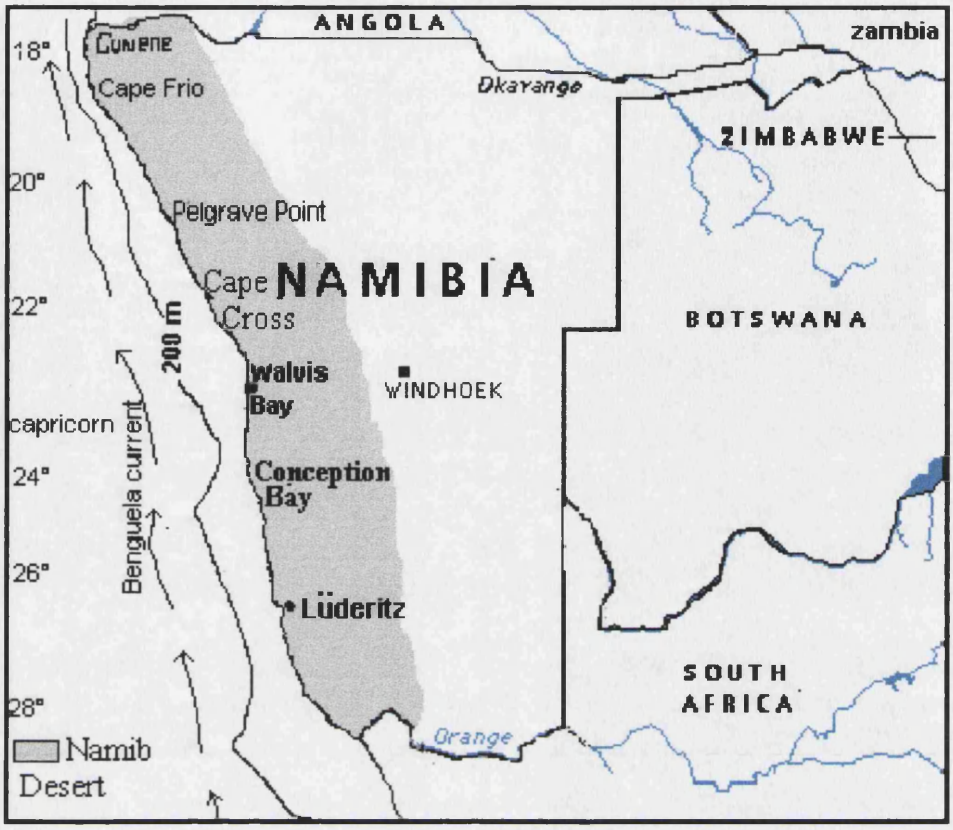

Figure 1: Map of Namibia, adapted from National Atlas of Namibia and World Book Multimedia Encyclopedia.

The barren, hyper-arid Namib Desert stretches the full length of the Namibian coast and for some 100 to 150 km inland. This inhospitable barrier between habitable land and the sea has meant that very few of Namibia's people historically lived on the coast. Lack of an historical association with the sea has in turn meant that, despite the richness of Namibia's marine fisheries resources, the Namibian people have no tradition of exploiting their marine resources and of claiming a long standing traditional right to the resource. Namibia does not have an established artisanal fishery so typical of most developing country fisheries.

This chapter will endeavour to establish the context of the subject of this thesis, briefly reviewing Namibia's history and economy and the role of fisheries in the economy. It identifies certain key problems evident in the management of the fisheries, introduces the theoretical basis for a discussion of the subject, presents an hypothesis and discusses the methodology used.

1.1 Namibia's history

The earliest evidence of human habitation dates back some 25 000 years in the form of ancient rock engravings, left there by the forebears of the San, the oldest inhabitants of Namibia. Pasturalists migrated to the central and southern regions of the country two to three thousand years ago. Agro-pastoralists had settled in northern Namibia by the mid-sixteenth century (Totemeyer 1978, pp2-3). European missionaries and traders began to visit Namibia from the early part of the nineteenth century.

In 1884 the German Chancellor, Otto von Bismarck, declared the present day Namibia to be the German colony of South West Africa. Following the outbreak of the First World War, South African forces militarily occupied the territory. In 1920 the Council of the League of Nations granted to His Britannic Majesty a C-class mandate over the territory of South West Africa to be exercised on his behalf by the Government of the then Union of South Africa (Dugard 1973, p72f).

During the pre-colonial and the German colonial period, exploitation of Namibia's marine resources was confined to whaling[1], sealing and the collection of guano, the accumulated dried droppings of fish-eating sea birds, promoted in Britain at the time as a wonder fertiliser. These were to have an impact on later political developments.

The extent of 19th century commercial activity based on marine life should not be understated. On a single day in December 1844 some 460 vessels were at anchor around the island of Ichabo (Kinahan 1992, p66), an island with a circumference of no more than one mile (Moorsom 1984, p16). Some six thousand labourers were engaged in digging out the 200 000 tonnes of guano, lying some 32 feet deep on this otherwise bare rock of an island (Kinahan 1992, p66-68). But there was then no commercial interest in fisheries as Namibia's fishing grounds were considered too distant from the markets where there was not, in any case, a shortage of supply.

Following the 'guano rush' of gold fever proportions in the first part of the 1840s, certain Cape Town firms continued to take an interest in collecting the annual deposits of the sea birds (Berat 1990, p196). They sent caretakers to Ichabo and other islands, all of them tiny, uninhabited and with no fresh water. The largest of them, Possession Island, is only 222 acres in area. As these islands

were not claimed by any state, the Cape Town merchants urged Britain to annex them in order to afford protection to their interests. Britain annexed the islands during the 1860s and they were ceded to the Cape in 1874 (Simon 1996, p197). As these islands came under the jurisdiction of the Cape Colony, South Africa claimed sovereignty over them as it did over Walvis Bay which was proclaimed British territory in 1878 and formally annexed by the Cape in 1884 (ibid.). This gave rise to the South African claim to marine zones relating to Walvis Bay and the islands, a claim contested by SWAPO and the post independence Namibian Government (see Ch. 3).

The general confusion regarding jurisdiction and the uncertainty relating to Namibia's future kept investment in Namibia's shore based fisheries facilities depressed until after independence. In contrast, there was a heavy commitment of capital equipment in the form of vessels which could be quickly removed to some other part of the world if the venture began to fail or otherwise came under threat.

The South African Government, which had wanted outright annexation of the conquered territory of German South West Africa after the First World War, accepted the C mandate because, as General Jan Smuts, the then South Africa prime minister, put it in a speech to the South African Parliament in 1925, "the mandate over South West Africa was nothing else but annexation....it gives the Union (of South Africa) such complete sovereignty, not only administrative, but legislative, that we need not ask for anything more" (Goldblatt 1971). This was the seed of the conflict which erupted later when the United Nations backed the struggle of the Namibian people for independence.

The South West Africa People's Organisation (SWAPO), now the party in government in Namibia, was formed in 1960 to campaign for Namibia's independence from South African rule. In 1966 SWAPO took up arms against the South African occupation of the country. That same year the United Nations General Assembly declared that South Africa had not fulfilled its obligations under the mandate and that the mandate, therefore, had been terminated (UNGA 1966). The United Nations Security Council endorsed this resolution in March 1969 and in so doing declared the South African occupation of Namibia illegal and called on South Africa to withdraw its administration immediately from Namibia (UNSC 1969). The International Court of Justice confirmed the legality

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[1] Hence the name of Namibia's main port, Walvis Bay

of this move in an advisory opinion in June 1971 (ICJ 1971). This placed South Africa indisputably in illegal occupation of Namibia.

The United Nations Council for Namibia (UNCN) was established by the UN General Assembly (UNGA 1967) to administer Namibia. On behalf of Namibia the Council signed the Law of the Sea Convention and ratified it in April 1983 (UN 1994). In June 1985 the UNCN resolved to proclaim an exclusive economic zone (EEZ) of 200 nautical miles (nm) for Namibia. When the Council debated a subsequent motion that the UNGA be asked to endorse the June 1985 decision of the Council, however, a provision was added, following consultation with SWAPO, that "any action for implementation of that decision should be taken in consultation with the South West Africa Peoples Organisation" (O'Linn and Twohig 1992, p24). No further move was made to implement the decision. As the UN did not have de facto jurisdiction over Namibia, exercising effective control over Namibia's waters would have been, at the very least, extremely difficult and costly, if not impossible. In addition, it is widely believed that no action was taken because, for political and financial reasons, SWAPO did not wish to alienate certain countries which had fleets operating in Namibia's waters under conditions of open access and free of any tax. Thus, for the most part, there was a political incapacity to assert jurisdiction over Namibia's fishing grounds on the part of either the UN or South Africa.

The dispute between the South African Government and the UN had an impact on, among other things, the fisheries. In the late 1960s, in response to the growing demands that it cease its illegal occupation of Namibia, the SA Government chose to tighten its grip on the administration of the country by transferring a range of government functions, including fisheries administration, to the central Government in Pretoria.

With mounting pressure from the international community and the passage of United Nations Security Council Resolution 435 in 1978, calling for elections and independence for Namibia, the South African Government moved to establish a degree of self-government for the country. It transferred a range of government functions, including fisheries, back to Windhoek as it wished to project an image of growing autonomy for its newly established administration there (AG5 1978). South Africa's administration in Namibia remained unrecognised by the rest of the world and was regarded by most of its people and the international community as a client government of South Africa. Consequently, when the South African Administrator General in Namibia declared a 200

nautical mile exclusive economic zone (EEZ) for Namibia in 1981 (AG12 1981 read with AG32 1979) it remained unrecognised and unenforceable. Major fishing nations with fleets within this proposed zone had no interest in forfeiting open access conditions in favour of jurisdiction by South Africa when they knew that South Africa had no right to make such a claim on behalf of Namibia. Any attempt at enforcement by South Africa would have been met with hostile resistance by the countries with fleets operating in those waters, which the South African Government could ill afford.

United Nations Security Council Resolution 435 (1978), the UN plan for elections and independence for Namibia (UNSC 1978), was finally implemented in 1989/1990, bringing an end to the 25 year long war of attrition and South Africa's illegal occupation of Namibia. Namibia became an independent state on the 21 March 1990. SWAPO won the independence election with a comfortable majority at the end of 1989 and, in the 1994 general election, increased its majority by gaining more than two thirds of the vote.

1.2 Political Economy of Namibia

Namibia is regarded as a lower middle income country with a per capita income of US$2000 (World Bank 1995, Table 1). This, however, hides a highly skewed distribution of income. Using 1990 data, the modern, largely 'white', sector of the economy has a per capita income of US$16,500 per year, while black people in the modern sector earn only US$750 per capita and the subsistence sector has a per capita income of only about US$85 per year (Belli 1991, p3). While the latter figure is clearly problematic, as survival is not conceivable at such a low real total income figure, it offers an indication of the extreme nature of the equity problem in Namibia. More recently the World Bank, assessing preliminary findings of the Household Income/Expenditure Survey undertaken by the Namibian Central Statistical Office, tentatively concluded that "about 25% of Namibian households, and about 30% of the population, are below the absolute poverty line" (Harrold 1994, p151). Any change in this respect since independence is marginal.

During the decade prior to Namibia's independence, real GDP at factor cost grew on average 0.41% per year (computed from Namibia 1980-1989). As population grew at an estimated 2.8% to 3.2% per annum (Belli 1991, p9), GDP per capita in real terms fell by some 26% during the decade. GDP growth since independence was modest and erratic between 1990 and 1994, averaging 3.5% for the period, marginally ahead of population growth. The relatively high degree of openness of the

economy, coupled with its dependence on primary products, is reflected in the erratic pattern of growth.

In its heyday, the fisheries sector, consisting then of the pelagic fishery and the rock lobster fishery, contributed 10% to GDP and 15% to exports (Moorsom 1984a, p27). By the end of the 1980s the fisheries sector contributed only about 3% to GDP and between 5% and 10% to exports, which largely reflected the decline in fish stocks. After independence, fisheries steadily increased its contribution to GDP to 7.6% in 1994 (MFMR 1995a, p19).

The Namibian dollar is fixed at parity with the South African Rand so that its fortunes are closely linked to those of the South African currency. The Namibian dollar replaced the South African Rand as Namibia's currency in September, 1993. This has meant that the Namibian dollar earnings for those fisheries that are exported outside of the Rand area have tended to increase as the Rand has fallen on international currency markets while those that are marketed within this area have had increased costs without increased revenue, particularly because of the sharply increasing cost of imported fuel.

The Namibian economy is dominated by the service sector, to which government services contribute 47%. A substantial change has taken place in the sectoral composition of GDP during the last 15 years. In 1980, 56% of GDP was accounted for by the primary sector, while the tertiary sector accounted for 35% of GDP. By 1995 the position had reversed. The tertiary sector accounted for 60% of GDP while the share of the primary sector had dropped to 27%. During the same period the share of the secondary sector, including fish processing, increased from 9% in 1980 to 13.2% in 1995. Concern has been expressed about the size of the civil service in Namibia in relation to the rest of the economy (Harrold 1994, p151) as general government consumption as a percentage of GDP has risen from 17% in 1980 to 31% in 1995 (World Bank 1995).

In general the economy is closely tied to that of South Africa. Up until independence, as a 1991 World Bank Report on Namibia put it, "for all practical purposes Namibia was run as a neglected fifth province of South Africa" (Belli 1991). Transport and communications links led to and from South Africa, with very poor links in other directions; the Namibia power grid was and still is interconnected with that of South Africa; the main export market for Namibian agricultural products and source of imports of manufactured goods was, and to a large extent still is, South Africa.

Since independence, government revenue increased steadily between 1993/94 and 1995/6. Tax revenues increased from N$2980 million in 1994/95 to N$3550 million in the 1995/6, an average annual growth rate of some 10% (Anon. 1996, p37).

Namibia's total outstanding debt is moderate but increasing. In December 1995 it stood at N$2525 million or about 23% of GDP, 81% of which was domestic debt (Anon. 1996, p35).

The annual average rate of inflation decreased from 10.74% in 1994 to 10.06% in 1995 and reflects the downward trend in the South African inflation rate in recent years.

The new Namibian Government at independence declared its intention to encourage investment and particularly to attract a greater flow of foreign direct investment. To that end it has created a range of incentives to encourage manufacturing and exporting. The corporate tax rate was reduced to 35% and non-resident shareholder tax to 10%. The maximum rate of personal income tax was reduced to 35%.

A "registered manufacturer", which may include a factory engaged in fish processing, receives an abatement of 50% of corporate tax for the first five years of operations, followed by a subsequent period of 10 years during which time the abatement is phased out on a straight line basis. Further tax deductions may be made for a wide range of export promoting activities, as an encouragement to use labour intensive manufacturing processes and to promote training of technical personnel. In addition to this, special write-off provisions may be made for buildings erected by manufacturing enterprises, at the rate of 20% for the first year and 8% per year of the balance over the next 10 years (MTI 1993). Further tax concessions and financial incentives are available for exporters of manufactured goods and those established in an Export Processing Zone but are not available to manufacturers of fish products.

The Foreign Investment Act passed through parliament in December 1990, as a first step in creating an enabling environment for foreign investment. The Act provides for a range of exemptions from exchange controls to enable repatriation of profits and capital and the availability of foreign currency for certain other payments (Namibia 1990c).

Foreign investment has also been encouraged through the establishment of the Namibian Stock Exchange (NSE) in 1992 which, in terms of market capitalisation of US$19 009 million, is second

only to the Johannesburg Stock Exchange in Africa and well ahead of the third largest in Africa, the Cairo Stock Exchange, with market capitalisation of US$8 088million . By June 1996, 26 companies were listed on the Namibian Stock Exchange, two of which were fishing companies. According to the International Finance Corporation, the NSE was the sixth best performing exchange in the world for international investors (Anon. 1996).

In general the Namibian Government has welcomed both foreign and domestic direct investment and portfolio investment by creating conditions very favourable for such activity. Along with many other developing countries that have established similar investment conditions, Namibia has not witnessed a flood of inward investment. On the whole, however, the economy is neither stagnant nor declining, nor is it growing significantly in terms of GDP per capita.

2. Problems of the Namibia's Fisheries Management System:

When the post-independence management of the Namibian marine fisheries is examined, two distinctive but related problem areas become apparent:

(i) The biological and the associated economic sustainability of the fisheries is questionable as a result of management decisions. The Benguela ecosystem, on which the Namibian fisheries rely, is subject to considerable variation but the economic structure and functioning of the industry is too rigid to accommodate this variability. Overcapacity has developed which creates unwarranted pressure for access to fish stocks and absorbs potential resource rents (Ch7, 4,5). Consequently, over-fishing has occurred, in the sense that the mortality rate of some fish stocks has increased dramatically, as the catch has not been reduced sufficiently to accommodate the naturally occurring reduction in biomass.

(ii) The Namibian Government's policy of enabling Namibia and Namibians to gain greater benefit from the country's marine fisheries resources has met with only limited success. Government policy has failed to shift substantially the benefit of the resource towards Namibians (Ch8). Although the state does now collect considerably more revenue from the sector, a substantial portion of the resource rent remains uncollected by Government. Some of it is being captured by participants in the fisheries as abnormal profits and some is dissipated through the development of over-capacity in the industry.

These problems are typical of those found with the management of large marine fisheries the world over (Mace 1997). The debate on the best methods of managing wild marine fish stocks is part of the larger debate on the management of common pool resources. It is a debate about sustainable use of marine resources at an optimum level and about to whom the rent associated with the resource belongs.

The possibilities of marine fisheries management, as opposed to an open access free-for-all, in the main only emerged since the 1970s with the extension of jurisdiction as a result of widespread state practice and formalised in the Law of the Sea Convention of 1982. Prior to the 1970s, effective management of wild marine stocks globally was very limited because of the absence of jurisdiction over most of the habitat where the fish are found. Management of large marine fisheries is, therefore, a relatively recent phenomenon and consequently the theory of fisheries management is still the subject of much debate.

The possibility of comprehensive management of Namibia's marine fisheries only arose with the extension of jurisdiction through the establishment of an exclusive economic zone (EEZ) following independence in 1990.

Fisheries management was initially a matter for marine biologists and in many places this is still the case. Management failures have lead to recognition of the importance of an holistic approach to fisheries management and consideration of the contributions of other disciplines in resolving marine fisheries management problems.

3. Hypothesis:

State involvement in the management of Namibia's marine fisheries is necessary: because (i) national fisheries management is a nested institution in a regime of global fisheries governance of a common pool fisheries resource, (ii) as a provider of certain services, in particular scientific services and those of enforcement, (iii) because of intra-generational and inter-generational equity responsibilities and (iv) as guarantor of the public interest.

The management of Namibia's marine fisheries resources by the post-independence Government will best be achieved by working towards a system of co-management between the state and industry in a joint endeavour to generate a socially optimal use of the resource. The effectiveness of the system is

dependent on a democratic environment that reflects the public interest in a resource that belongs to the country as a whole, and through the collection by government of a larger percentage of the resource rent as a means of directing it towards more effective usage in the development process.

State responsibility for national fisheries management and its characteristic as a nested institution within a global regime of governance, has in part arisen through major changes in the law of the sea during the past two and a half decades. Market driven systems of quota allocation do not offer a panacea through which Namibia's fisheries management problems could be solved, but may have a limited role providing resource rent is collected by government through levies. It is argued by some protagonists of such systems that they can reduce the extent of, or even eliminate, the need for regulation by government; this thesis contends that regulation by government is an essential aspect of successful fisheries management which needs to be based on a more co-operative climate between Government and industry in a joint endeavour to generate a socially optimal use of the resource.

4. Theoretical approach to the problem:

The objective of this thesis is to examine the effectiveness of Namibia's fisheries management system, to assess the fulfilment of the Government policy objectives and to make recommendations for the more effective management of the resource and of the distribution of benefit accruing from the resource.

Part one of the thesis sets about identifying and theorising the problem Namibia faces in the fisheries sector.

The potential of the Namibian fisheries, the characteristics of the Benguela ecosystem on which the fisheries are based, the characteristics of its commercially valuable species and the past, present and potential role of the sector in the Namibian economy are the subject of Chapter 2 which offers the background to the subject of this thesis, necessary for the identification of the problem and discussion of the theory that informs it.

The development of overcapacity, the loss of resource rent and of inefficiency are problems that often occur in the use of common pool resources (CPR). Common pool resources may be defined as "natural or man-made resources sufficiently large that it is costly to exclude users from obtaining subtractable resource-units" (Ostrom 1992, p295). The term 'common pool resources' will be used

in this thesis to avoid the confusion often created with the use of the term 'common property resources' (Bromley 1992, p4). The term is neutral in relation to whether the resource is one over which nobody has property rights, as is often the case with open access in fisheries, or whether the resource is deemed to be state, common or private property.

There has been considerable interest in the literature over the nature of common pool resources, the problems that often arise in their usage and in the solutions which may be available to resolve them. This has particularly been the case in the management of large marine fisheries, since the extension of jurisdiction over the last 30 years opened up possibilities of managing marine fisheries resources, in contrast to the existing centuries-old regime of open access.

The general problem of competitive exploitation of a common pool resource has been raised by a number of scholars. Garrett Hardin, in an often cited article, "The Tragedy of the Commons" (Hardin 1968), stimulated a new wave of debate in the literature. Olson challenged the optimism expressed in group theory by using the "free rider" problem to demonstrate why individuals may tend to not choose collective action to achieve a Pareto optimum (Olson 1965). These and Dawes' 'prisoners dilemma' game (Dawes 1973) have been used to demonstrate this phenomenon of a tendency towards over-exploitation of the commons.

The essence of these observations, however, was made in the fisheries literature much earlier. The problem was first articulated in a little known article written in Danish by Jens Warming (Warming 1911). However, it was H. Scott Gordon (Gordon 1954) and Anthony D. Scott (Scott 1955), neither of whom seemed to be aware of Warming's article, who are generally credited in the fisheries literature with first establishing a model of the bio-economics of a fisheries.

The theoretical core of fisheries management is the dynamics of the bio-economic functioning of a fishery, a subset of the broader question of the dynamics of the use of a CPR, and the dissenting opinions regarding the usefulness of this analysis. Through this we are able to develop an understanding of the ease with which a renewable resource may be over-used, and of the extent, use and abuse of resource rent associated with fish stocks. This body of theoretical literature, discussed in Chapter 3, offers a reference point for examination of the sustainability of resource use, the efficiency of the system and the use of resource rent.

This leads to a discussion in the same chapter of the most common approach to the management of large marine fisheries, state enforcement of regulations. The debate about fisheries management is, in part, a subset of the debate about states and markets. Theories of the state and its role in social organisation, including that on a global scale, and the role of the market in determining the use of natural resources inform the debate on fisheries management. The problems with direct regulation by the state are discussed in terms of the model, and insights from the debate on the role of the state versus that of the market are applied to the regulation of fisheries. The role of the state in production, in securing a social consensus and in social integration are discussed. The efficacy of direct regulation by government of fisheries resources and the allocation of fishing quotas raise questions of rent and rent seeking behaviour. The extent to which the answer lies in transparency and accountability by government, or the feasibility of establishing a framework within which a market may operate, are issues which arise in this context.

Chapter 4 examines alternative approaches to management of fisheries resources. It explores the theoretical advantages of appropriation of the resource by a 'sole owner'. It then examines the now quite extensive literature on the co-operative self-management by the appropriators of small common pool resources. Many of these have been successfully managed in this way over extended periods of time. What clearly emerges is that CPRs do not necessarily degrade and that if the design principles associated with successfully managed small scale CPRs are applied as closely as possible to the management of large marine fisheries, the chances of successful management are likely to improve. The work of Ostrom and others is used to demonstrate the non-inevitability of degradation of the commons. The problems that occurs in the competitive use of a CPR, and more specifically in the fishery, are discussed in Chapter 4. Finally the chapter will discuss attempts at creating private property rights and particularly the much debated notion of individual transferable quotas.

The post-independence management of Namibia's stocks is then examined in Part two.

The international political economy of the fisheries sector and its impact on the Namibian fisheries is discussed in Chapter 5. In particular, the application of the Law of the Sea Convention (UN-LOSC 1982) and other international fisheries agreements to the Namibian fisheries sector are examined. The opportunities offered and constraints imposed by them on national management of the fisheries sector establishes how national fisheries management by a coastal state is a nested institution in a global management regime agreed to through a process of negotiation by states acting as players in the

resolution of problems which developed over the use of a global common pool resource. This involves examining the extent to which Namibian national law has been made consistent with the Law of the Sea Convention and other key international agreements and examining the extent to which and the manner by which this affects the management process.

The fisheries regime that has evolved following Namibia's independence is discussed in Chapter 6. The objective of fisheries policy and the targets the Ministry of Fisheries and Marine Resources set itself are reviewed. The new Sea Fisheries Act and associated Fisheries Regulations, aimed at giving effect to the policy, are examined. The criteria used and process adopted are analysed, revealing the approach of the Namibian Government to the management of equity aspects of the problem.

The two chapters that follow examine how well the new regime has performed in meeting the major objectives of Government for the sector.

Two criteria are applied in Chapter 7, which examines the extent to which the fishery is moving towards optimal sustainable use of the resource. The first is the sustainability of the use of the fisheries resource at an optimal level as this is fundamental to the long-term, inter-generational, efficient use of the resource. It is also presented by the Namibian Government as a key objective in the management of the resource. Estimates of biomass for different species, the total allowable catch (TAC), and actual catch are analysed in order to demonstrate increasing mortality rates of key species and biologically unsustainable management decisions. The data, obtained largely from the MFMR, also demonstrates the importance of the economic parameters being sufficiently flexible to accommodate the demands which the ecosystem will periodically make. The poorly developed nature of the marine sciences means that determining an optimal off-take is difficult, stock assessments are very approximate and management decisions are made in the context of considerable uncertainty.

The second criterion used is that of efficiency in the use of resource rent. Some resource rent is being dissipated through inefficiencies, either the biological inefficiency of a non-optimal, though sustainable, offtake or through over-capacity or other inefficiencies.

An analysis of data for the industry, some supplied by the Central Statistical Office in co-operation with the Ministry of Fisheries and Marine Resources in Namibia and based on the first annual survey

of the industry for 1994, provides an overview of the economics of the industry. These data are supplemented by additional data primarily collected through unstructured interviews with representatives of the industry and Ministry.

The extent to which Namibia and Namibians have gained greater benefit from the resource is the subject of Chapter 8. This reflects the principle that the benefit of marine fish stocks belong to the country as a whole and that the Namibian people should thus be the major beneficiaries of the resource. This is also a declared objective of Namibian Government in the use of the resource.

Analysis of the directorships and shareholdings of companies in the fishing industry offers the possibility of the following: By comparing the shareholdings of the companies which, at the end of 1993, were granted a "right of exploitation", a necessary prerequisite for being granted a quota, and who owns those companies now, it is possible to establish the extent and nature of the change in the pattern of ownership that has occurred in the industry since the most important step in implementing the policy of 'Namibianising' the industry was put into effect. This comprehensive set of data was collected from the Register of Companies in Namibia, in the case of directorships, and from the companies themselves, or from their company secretaries in the case of shareholders.

This analysis also contributes in part to demonstrating how the industry has become more complex, thus raising transaction costs, as it seeks to accommodate the new regulations while minimising changes in those benefiting from the resource. Some aspects of increased complexity are not reflected in the change of ownership, as a range of other means are used to extract value from the resource.

It will be argued that resource rent of considerable value remains uncollected by Government and that this represents, in effect, a subsidy to the industry. The share in the ownership of companies in relation to the size of the quota received by those companies and the value of the estimated uncollected resource rent associated with the quota demonstrate the need for an alternative method of distributing benefit from this resource if the distributional aspects of government policy in the fishing industry are to be met.

5. Methodology

In order to establish the argument of this thesis, data were collected relating to the biological and ecological factors relating to the fish stocks and their environment, aspects of the economic state of the industry and on the political-legal framework within which the management of the industry takes place.

The fieldwork undertaken for this project was done mostly in Namibia but did include a brief visit to Johannesburg. The main period of fieldwork was between mid-October 1994 and the end of March 1995 with a supplementary six week period from the beginning of September 1996 until mid-October 1996.

During the first period, work was undertaken in Windhoek, the capital, where the Ministry of Fisheries and Marine Resources is based, where part of the data pertaining to ownership and control of fishing companies are to be found and where legal material was available. Time was also spent at Namibia's two ports of Walvis Bay, the main fishing port, and at Lüderitz on the southern part of the coast, where the operational side of the industry is based. A five day inspection trip on the fisheries patrol vessel, Cuito Cuanavale, and a two day trip on a fishing trawler were undertaken out of Walvis Bay.

During the second period the time was split between Walvis Bay and Windhoek.

5.1 Approach to the methodology

My initial impression in tackling this project was that the Namibian Government was indeed succeeding where others had failed in fulfilling the objectives which it had set itself in the White Paper of 1991 (Namibia 1991a). The Ministry of Fisheries and Marine Resources could point to a remarkable recovery in the biomass of stocks by 1993/4 (Ch7, 1), the open access free for all had been ended (ch.6, 3) and rights of exploitation given largely to majority Namibian owned companies (Ch.6, 4.1.3). The environmental downturn in the Benguela ecosystem in late 1993 and the collapse of stocks helped to identify the shortcomings in the management of the fisheries. Following an initial series of interviews with "newcomer" companies in the industry, it became apparent that close examination of the ownership and control of the industry was needed. This resulted in a more critical investigation being undertaken.

In examining the management of the Namibian fisheries sector, it was apparent that key factors to consider were the political-legal context of the jurisdiction over the harvesting of fish stocks, the bio-economic dynamics of the fishery and the ownership and control of the fisheries sector.

5.2 Literature:

The main body of literature drawn upon in preparing this dissertation was the literature on the bio-economics of the fishery. However, the interdisciplinary demands of the subject necessitated a review of ecological literature, particularly that relating to the Benguela ecosystem, the legal literature on the international law of the sea and Namibia's own national fisheries legislation, and the literature on the state and globalisation.

My standing with the Namibian Government probably helped me to gain easier access to information that might otherwise have been the case. I had access to internal confidential documentation, memoranda and reports that I was not able to use directly because I was bound by confidentiality but which in instances corroborated the information from other sources which I was able to quote in this manuscript.

Similarly, many informal discussions with Ministry officials and industry representatives took place. In many instances I was told things in confidence which, as a result, I was not able to cite, yet they influenced my judgement of the data and my interpretation of developments.

Another source of influence was the electronic discussion forum, the Fisheries Social Science Network (Fishfolk)[2], some postings of which were cited in this thesis. The debates, often pertinent to this project, had an impact on the opinions I formed.

My participation in the Second World Fishing Congress in Brisbane, Australia, in July 1996 also constituted an influence which helped shape my opinions.

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[2] web address: http://web.mit.edu/seagrant/www/fishfolk.html#sub

5.3 Data collected

The data collected included statistical data relating to catch and price statistics, data on the control and ownership of the fishing industry, data relating to the fleet, treaties and other international legal agreements, statutes and case reports, and quantitative and qualitative data collected through a series of unstructured interviews. Some time was also spent observing the procedures for counting and checking catch by inspectors at the port and on vessels.

5.3.1 legal material

The post-independence management of Namibia's fisheries involved a major change of regime. With the declaration of an EEZ, Namibia gained certain sovereign rights over a large part of its fishing grounds which previously fell under the regime of the high seas. An examination of the application of the international law of the sea to the Namibian fisheries sector was undertaken. To this end I followed the Law of the Sea course offered to LLM students in the first year of the programme. An examination of the legal framework governing the Namibian fisheries sector which included constitutional requirements, statutes and case law was then undertaken as part of the fieldwork. It established the character of the Namibian fisheries management system as an institution nested in a broader regime of global governance of the fisheries, discussed in Chapter 5.

5.3.2 Biological and ecological data

Much of the data relating to the biology and ecology of the fisheries were gleaned from papers prepared by the scientists working for the Ministry's Directorate for resource management, most of whom are based at the National Marine Information and Research Centre at Swakopmund, 30 km north of Walvis Bay and, to a lesser extent, at Lüderitz in the south.

Some of the papers were presented at the annual research seminars held by the Ministry to afford the opportunity to the scientists working in the Ministry and other invited scientists and the management staff to review together the state of stocks and the marine environment. From 1995 this was opened up further to include interested participants in the fishing industry. I attended the 1995 seminar and obtained full sets of the research papers for the years 1992, 1993, 1995 and 1996.

I was also granted access to other internal scientific material in the form of reports and memoranda. From this body of literature I collected data relating to biomass, cohort composition of the stocks and data relating to the changes in the Benguela ecosystem, the marine environment on which the stocks depend. This was supplemented with published and unpublished papers from the South African scientific community who have worked on the Benguela ecosystem and its species.

Catch statistics were obtained from the Ministry of Fisheries and Marine Resources from data collected after independence and data relating to the Namibian based industry before independence. The data collected by the International Commission for South East Atlantic Fisheries (ICSEAF) for the off-shore fisheries for the pre-independence period were obtained from the ICSEAF Statistical Bulletins.

5.3.3 economic data relating to the industry

Four principal sources of data were used.

1. In 1994 the MFMR initiated an annual survey of the fishing industry as a means of collecting relevant data on the industry. Although the legislation requires of a quota holder that they supply the Permanent Secretary of the MFMR "with any information specified, and within a period mentioned" (Namibia 1992a, s20(5), s25(5)), only about 70% of the companies responded (Clark 1996). In addition, they could not be considered a representative sample. There were inconsistencies in the data, such as instances of the aggregate of individual cost items of a company not equalling the total costs (ibid.).

   The survey returns for 1995 were more complete than those for 1994 (Clerk, 1996) but are only being put into the database in late 1997 and are unavailable for use. Other difficulties exist with this survey. The survey asks for the value of capital assets by type of asset but data on the assets of foreign companies involved in the fisheries are not supplied. Data that are supplied are provided in a manner that makes it difficult to attribute to particular fish species. In addition, the survey is designed to be filled in from a company's annual financial report, giving accounting value for tax purposes and not necessarily the economic value. The survey needs refining to become useful.

For reasons of commercial confidentiality, the detailed data of particular companies could not be quoted and only aggregates for a sub-sector could be used, but not if it was possible to identify what was considered commercially confidential information of a particular company.

2. Other information from the MFMR was also used, much of which is being put into the Fisheries Information System. For example, the catch statistics which are collected through the catch log on board each vessel and landing statistics recorded by fisheries inspectors.

3. Other information supplied by individual fishing companies: I conducted unstructured interviews with a sample of 20 fishing companies, 7 of which were established companies and 13 were newly formed companies within the industry. As so much of the information provided through the interviews was given in confidence, they served largely to provide useful background information although interviews are cited in certain instances.

4. External sources were used, such as the Food and Agricultural Organisation's Globefish European Fish Price Reports which provided detailed price information for Namibia's main hake market for the species of hake caught in Namibia (Ch. 7, 5.1).

5. Data on Namibia's national fleet (Ch.7) are extracted from the Register of Licences maintained by the MFMR and which is publicly accessible at the Ministry (Namibia 1992a). The classification of vessel classes is based on proxies for fishing effort developed by Moorsom who used historic catch data of the Namibian fleet to arrive at catch capacity for each class (Moorsom 1994). Aggregate catch capacity for each class was calculated in order to examine the growth in the capacity of the fleet.

5.3.4 Ownership and control of the industry

At an early stage in the fieldwork, I undertook a series of unstructured interviews, principally with representatives of the "newcomer" companies. It quickly became apparent that lack of finance in particular had led many of them into disadvantageous commercial relationships with larger companies within the industry. This added a further dimension to my decision to examine the ownership and control of the industry.

The list of 124 companies granted rights of exploitation in 1993 (see Ch.6, 4.1.3) formed the starting point of this investigation. Two pieces of information were extracted from the Register of Companies (MTI Register), held by the Ministry of Trade and Industry in Windhoek. These were the names, addresses and other details of the directors of the companies and the address, in each case, where the company's register of members is held. The latter is generally held by the company secretary which, in most cases, is supplied as a service by the company's auditors. The location of a company's register of members was not correct in approximately 20% of cases, although usually it was possible to trace the share register through the leads given by the company's previous secretaries.

On the whole, the Register of Companies is satisfactorily kept. The Registrar, however, does not appear to have available the resources needed to be sufficiently proactive in pursuing companies to ensure that the information which the Register should hold is kept up to date. Thus information regarding directorships and the location of the members' registers which hold the shareholdings of the company is not up to date in a significant minority of cases.

The identification of a company as a shareholder necessitated fresh scrutiny of the Register of Companies and the follow-up process of tracing that company's register of members[3]. This was repeated until the beneficial shareholders were identified wherever this was possible. In some cases the shareholders were identified as nominee shareholders and the true identity of the beneficial shareholders could not be established. In others, a shareholder was a foreign registered company for whom it was not usually possible, within the financial and time limitations of this project, to establish the identity of the beneficial shareholders.

5.4 Further limitations of the thesis

It should be noted that no data on taxes paid are collected by the MFMR through its annual survey of the fishing industry, and that the Ministry of Finance and the companies treat company tax returns as confidential information. It was therefore not possible to collect data on flows of taxation and subsidy.

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[3] The term 'register of members', used in the Companies Act 61, 1973, is used in this thesis. The terms 'transfer register' and 'share register' are also used in the industry to describe the same register which contains the official record of shareholdings and the history, for at least 15 years, of transfers of shares. The Companies Act makes it obligatory in section 113 that the register of members be made available for public scrutiny.

No attempt is made to offer a full economic analysis of the fishing industry, desirable though that would be, because adequate data are not available to do so. Instead the economic aspects of the research focus on limited quantification of resource rent where possible, demonstrating that significant resource rent remains available to the industry either as abnormal profit or as financing of overcapacity (Ch7) and on the distribution of that rent.

In addition, there is no discussion of the proposal to develop a fishing port and processing facilities at Möwe Bay on Namibia's northern coast. If it were to be developed, it would have an enormous impact on the fishing industry. An unpublished pre-feasibility study was done by W.A. Klein and R. Moorsom in 1993 and a full feasibility is underway at the end of 1997. It is unlikely, in the foreseeable future, that the port will be developed because of existing over-capacity in the industry which would be exacerbated by the development of further capacity at the new port, and the sizeable capital and operational costs involved.

There is limited discussion on the impact of the re-integration of Walvis Bay into Namibia as discussion is limited to what is essential for this thesis. Fuller treatment is to be found in Simon 1996 (see also Moorsom 1984b; Berat 1990; Akwenda 1989).

6. Conclusion

This thesis scrutinises the nature and extent of problems experienced by the Namibian fisheries sector. It examines the response of the post-independence Namibian Government and assesses the outcome of that response in the post-1990 management of the Namibian fisheries. It recognises the nested nature of national management of a fisheries within a global regime and the role of the state as a result of this and of the trans-boundary nature of many large marine ecosystems, including that of Namibia. The inter-temporal responsibility of government towards future generations also necessitates a role for the state as does the constitutional commitment of making the resource of greater benefit to Namibians. The thesis finds that the state has a pivotal role to play in the management of Namibia's fisheries and, in particular, in ensuring that the dual objectives of optimal sustainable resource use and of gaining optimal benefit for Namibians is fulfilled. It concludes that

the system does not yet produce the desired results and that adjustments need to be made both in the resource management aspects and in the allocation of benefit from the resource.

PART ONE:

IDENTIFYING AND THEORISING THE PROBLEM

The purpose of Section One of this thesis is to identify and define the nature and extent of the problems with the fisheries sector which the Namibian Government inherited at the time of independence and to apply the theoretical insights available in the quest for a solution.

Chapter 2 introduces the Benguela ecosystem, the rich fisheries it is potentially able to support and reviews the pattern of exploitation before Namibia's independence. Precisely because of the abundance of marine life found off the Namibian coast, combined with the illegal status of South Africa's occupation of Namibia before independence and the consequent open access conditions on most of Namibia's fishing grounds, a large number of foreign fleets were attracted to what are now Namibia's fisheries. The development of the problem is thus defined in the second part of Chapter 2.

The theoretical definition of the problem of regulation is tackled in Chapter 3. It emphasises the tendency towards negative externalities in a large marine fisheries and the dissipation of resource rent which so frequently occurs. This in turn raises the question of regulation by the state, the problems associated with such state activity and the importance, in contrast, of the state assuming this function.

Chapter 4 analyses alternative management systems in the fisheries sector. It examines the theoretical notion of sole ownership of fisheries, the lessons that may be learnt from the management of small common pool resources and the attempts at defining private property rights for fisheries resources. The chapter concludes with an examination of the concept of co-management of fisheries by the state, the industry and other interest groups as the means of most effectively and efficiently managing marine fisheries.

Chapter Two

NAMIBIA'S FISHERIES RESOURCES: OVER-EXPLOITATION AND DECLINE

The Benguela ecosystem has particularly high primary productivity, providing Namibia with the marine equivalent of a very fertile and productive pasture, capable of carrying large and healthy stocks of fish. This is reviewed in the first part of the chapter. With the open access conditions in effect existing for a large part of the fisheries, the fleets of distant water fishing nations, as well as the South African fishing companies, were attracted to Namibia's waters resulting in the eventual depletion of Namibia's most valuable commercial species. This pattern of exploitation is reviewed in the second part of the chapter.

Part one: the resource

1. The Benguela ecosystem

The Benguela ecosystem, on which the Namibian fisheries is based, is one of the four major eastern ocean boundary upwelling systems of the world. Upwelling is a process whereby cool, nutrient rich water is drawn up from deeper levels to the surface of the ocean above the continental shelf. Its significance is discussed further below. The Benguela ecosystem is found between approximately 15°S and 34°S, stretching from southern Angola to the west coast of South Africa. The other eastern ocean boundary upwelling systems occur off Chile and Peru, off California and off Mauritania and Morocco.

The cold Benguela Current, a relatively narrow jet current of largely upwelled water flowing swiftly northwards at 1-5 km per hour (Field and Glazewski 1992), forms a boundary between the cool upwelled coastal water and the warmer central Atlantic surface water further seaward. It influences the continental shelf from the west coast of South Africa in the south to just north of the Kunene River which forms part of the Namibian border with Angola. It is separated from the West Wind

Drift of the Southern Ocean by a belt of warm surface water, the Subtropical Convergence Zone (Shannon 1985).

Deep sea drilling cores show that persistent upwelling occurred off the coast of northern Namibia in the late Miocene, about 10 million years ago (Meyers et al 1983) but that the Benguela system as it is today dates from the late Pliocene, 5 million years ago (Shannon 1985). The ecosystem is thus fundamentally stable although concerns have been expressed regarding the long term impact of climate change on large scale meteorological features and ocean circulation (Tegart, Sheldon et al. 1990, chapter 6) and thus the potential impact of such developments on the productivity of the Benguela ecosystem.

1.1 Upwelling: the impact of topography and meteorology

As more than 90% of fish caught globally are fished in waters above continental shelves, the nature and extent of the shelf area have a bearing on the size of the fishing grounds and its productivity. The topography of the Namibian coast also contributes to the upwelling process.

The coast line is about 1500 km long, has few bays or indentations and runs in a north north west to south south east direction. The Namib Desert is found between 14°S, in southern Angola, and 31°S, just south of the Namibian/South African border. It is widest in the central region where the Namib sand sea is found. Historically the desert has meant that Namibia has had no coastal population apart from a very small community that for centuries has lived at the mouth of the normally dry Kuiseb River, where the port of Walvis Bay now stands. The total coastal population in 1995 was estimated at about 50 000, 4% of the 1.5 million total population of Namibia. This is particularly unusual for a country which has such a large and productive fisheries sector.

The combination of desert, typography of the coastline and the small size of the coastal population has meant that Namibia has only two harbours, those of Walvis Bay and Lüderitz, thus limiting the places where fish can be landed and increasing the ease with which the fishery can be regulated.

Namibia's continental shelf varies in width. It is narrowest off the Namibian border with Angola where it is about 45 km wide and the shelf break is at a depth of about 200m, beyond which the continental slope is relatively steep. The widest part is off the Orange River (180 km) where the

shelf break is also at about 200m. The Walvis shelf between Cape Frio (18°S) and Chamais Bay (28°S) is typically 140 km wide and the shelf break is relatively deep at about 350m on average (Shannon 1985, p113). The area of the shelf is about 110 000 sq. km. to a depth of 200 m and about twice that much to a depth of 1000 metres (Bianchi 1993, p1).

The deep ocean abyssal plain off Namibia comprises the Angola and Cape Basins which are separated by the Walvis Ridge, which runs from the continental slope at about 20°S in a south-westerly direction for 2500 km towards the Mid-Atlantic Ridge. This not only has a major influence on the circulation of the south east Atlantic (Shannon 1985, p112) but it constitutes the habitat of commercially valuable deep sea species of fish beyond the 200 nm exclusive economic zone (EEZ) of Namibia but in which the Namibian fishing companies are interested and over which the Namibian government wishes to extend a measure of control[4].

The sediments of the continental shelf are important in an upwelling system as they have a bearing on the primary productivity of the ecosystem. Organic matter lying on the sea bed, whether it be formed from decaying marine plankton or fish or land run-off, is mixed during upwelling into the surface sunlit layers of water where, through a process of photosynthesis, microscopic plant life, phytoplankton, is produced. The most important feature of the sediments of the Namibian shelf is the 500 km long mud belt in the middle shelf between Cape Frio and Conception Bay which comprises organic rich diatomaceous oozes with an organic carbon content greater than 5%. (Birch et al, 1976). The shelf area between Lüderitz and Cape Cross has the highest organic carbon values (15% C_{org}) which relate to the diatomaceous muds found there. The outer and middle sections of the shelf are covered by carbonate-rich sediment with calcium carbonate content greater than 50% (ibid.).

The **meteorological** features of the Benguela region drive the upwelling system that make the fisheries potentially so productive. Upwelling occurs primarily as a result of the south easterly winds, the rotation of the earth and the direction of the coastline. The prevailing south to south easterly winds blowing off the coast of south western Africa generated by the South Atlantic high pressure system (Nelson and Hutchings 1983, p 339), coupled with the topography on the coast line,

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[4] Chapter 5, 2.2.1, discusses an initiative to establish a regional organisation under the Straddling and Highly Migratory Stocks Agreement.

push the surface water northwards. The rotation of the earth causes the moving surface water to veer towards the west away from the coast, a process known as the Ekman transport phenomenon (Shannon 1985, p117). The water blown offshore is replaced by a movement of cold, nutrient rich water from depths of 150 -300 metres up to the surface of the sea (see Figure 2).

Nutrients of the carbon rich sediments discussed above, which include nitrogen, phosphorus and silicon, are drawn to the surface, acting as a fertiliser for phytoplankton, which blooms as a result of photosynthesis. Phytoplankton provides the rich basic element in the food chain of the ecosystem and directly sustains large zooplankton and pelagic fish stocks.

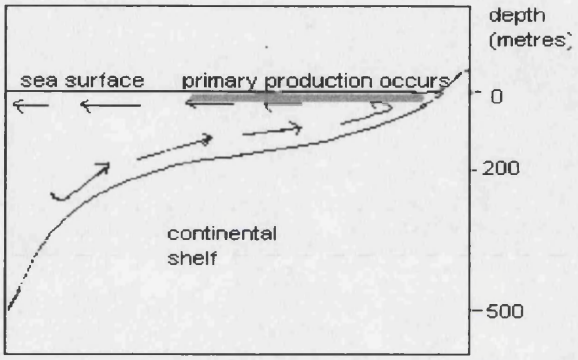

Figure 2: The upwelling process

Upwelling is not uniform in space or in time along the coast. The principal upwelling centre of the Benguela is in the vicinity of Lüderitz (27°S) (Shannon 1985, p141, quotes work of several researchers). This is identifiable from the two satellite images in Figure 3 below. Between 26°S and 28°S, low sea surface temperatures are most evident. Upwelling occurs here throughout the year and does so more intensely and more frequently than elsewhere in the Benguela system (Stander 1964). It is strongest in spring and weakest in the autumn (Shannon 1985). This powerful upwelling cell, with its large body of cold surface water, functions as a major environmental barrier in the Benguela and affects the distribution of certain species of fish.

It would seem that the bottom typography of the area contributes to the productivity of the Lüderitz cell. Stander (1964) noted that the shelf is deep here with the shelf break at about 500 metres (Shannon 1985, p114).

Central and northern Namibian upwelling occurs around Conception Bay (23°S) and south of Cape Frio (18°S-19°S) and Palgrave Point (20°S-21°S) (Shannon 1985, p150). The area between Walvis Bay and 21°S is a transitional area between the strong Lüderitz upwelling cell and northern Namibian zones (ibid., p117) and has a typically lower upwelling intensity.

The Benguela system extends south along the west coast of South Africa. In the southern part of the system in South African waters the upwelling is more intermittent and occurs mainly during the summer when the south easterly winds prevail at that latitude.

It should be noted that upwelling varies in strength along the Namibian coast with the most consistent occurring in the Lüderitz cell. The primary production of the ecosystem is high, providing a basis for regeneration of commercially valuable fish stocks. However, disturbance of the upwelling process has a dramatic effect on primary production and, consequently, on fish populations and thus on the fisheries. Periodic failures of the upwelling process happen where the upwelling becomes very weak or no longer exists and high levels of natural mortality among fish stocks occurs. Such events are part of a major global climatic cycle that has an impact on the Benguela system.

1.2 Global climatic cycles and the Namibian fisheries

The importance for fisheries management of global climatic monitoring is becoming increasingly recognised (Sharp 1987). Fisheries management methods have tended to overemphasise catch and effort statistics as the basis for successful resource management. Sharp notes that the traditional approach to fisheries management remains relatively primitive in relation to available scientific knowledge (Sharp 1987, p811). The fate of populations of many species is more closely tied to environmental factors than to fishing effort, so that managing the fishery through large scale environmental events becomes critical to the survival of many fisheries and is the real test of successful management. The importance of regulating fishing effort in relation to changing environmental factors has been illustrated recently in the Namibian fisheries, particularly in the pilchard fishery.

In Namibian waters warm water intrusions, which are part of the El Niño/Southern Oscillation (ENSO) phenomenon, happen periodically, as does the better known ENSO warm event in the

Pacific. Major events were recorded in the Benguela system in 1984 (Shannon et al. 1986) and 1993-5 (O'Toole 1995). In the Pacific and Indian Oceans, warm waters move eastward in the equatorial latitudes with the warmest sea temperatures pooling along the South American coast in the Pacific and in the central region of the Indian Ocean.

The global climatic links have been recognised which make possible prediction of regional climatic conditions for the agricultural sector. Considerable evidence exists that the periodic droughts southern Africa experiences are linked to the El Niño warm event (Cane et al. 1994, p204). The authors demonstrate a significant correlation between Zimbabwe's rainfall and consequent maize crop and sea surface temperature (SST) in the eastern equatorial Pacific. A correlation was also established between SST anomalies in the south Atlantic and south Indian oceans and precipitation patterns over southern Africa (Shannon et al 1990, p356). It is now becoming widely accepted that global climatic cycles occur and that they are not abnormal aberrations.

The Atlantic Ocean warming process does not seem to occur as a result of the eastward movement of a warm water mass. Instead it occurs as a result of changes in sea level atmospheric pressure and surface winds (Shannon et al. 1986) and is part of the same ENSO driving the warm events in the Indian and Pacific Oceans. When the warm event is peaking in the Indian and Pacific Oceans, the south to south easterly winds productively pump the upwelling system off Namibia (Figure 3, (ii)). The south easterly winds weaken about 12-18 months after the Indo-Pacific El Niño occurs, the upwelling process weakens, sea surface temperatures rise (Figure 3, (i)) and the Benguela warm water event is underway (Anon. 1994, p585).

A prolonged warm water event occurred in the south east Atlantic from the latter part of 1993 until 1995 following the extended two year El Niño (1991-1993) in the Pacific; this has had a considerable impact on the fisheries. Similarly the 1982-1983 Pacific El Niño peaked in the first quarter of 1983 (NOAA 1997) and was followed by a Benguela warm event which peaked between February and May 1984 (Shannon et al. 1986, p508)[5].

[5] There was a discussion of the possible association between the Benguela perturbation and the Pacific El Niño in a number of articles in the February 1984 issue of the South Africa Journal of Science (Vol.80).

(i) SST image, 18 April 1995

(ii) SST image, 5 September 1995

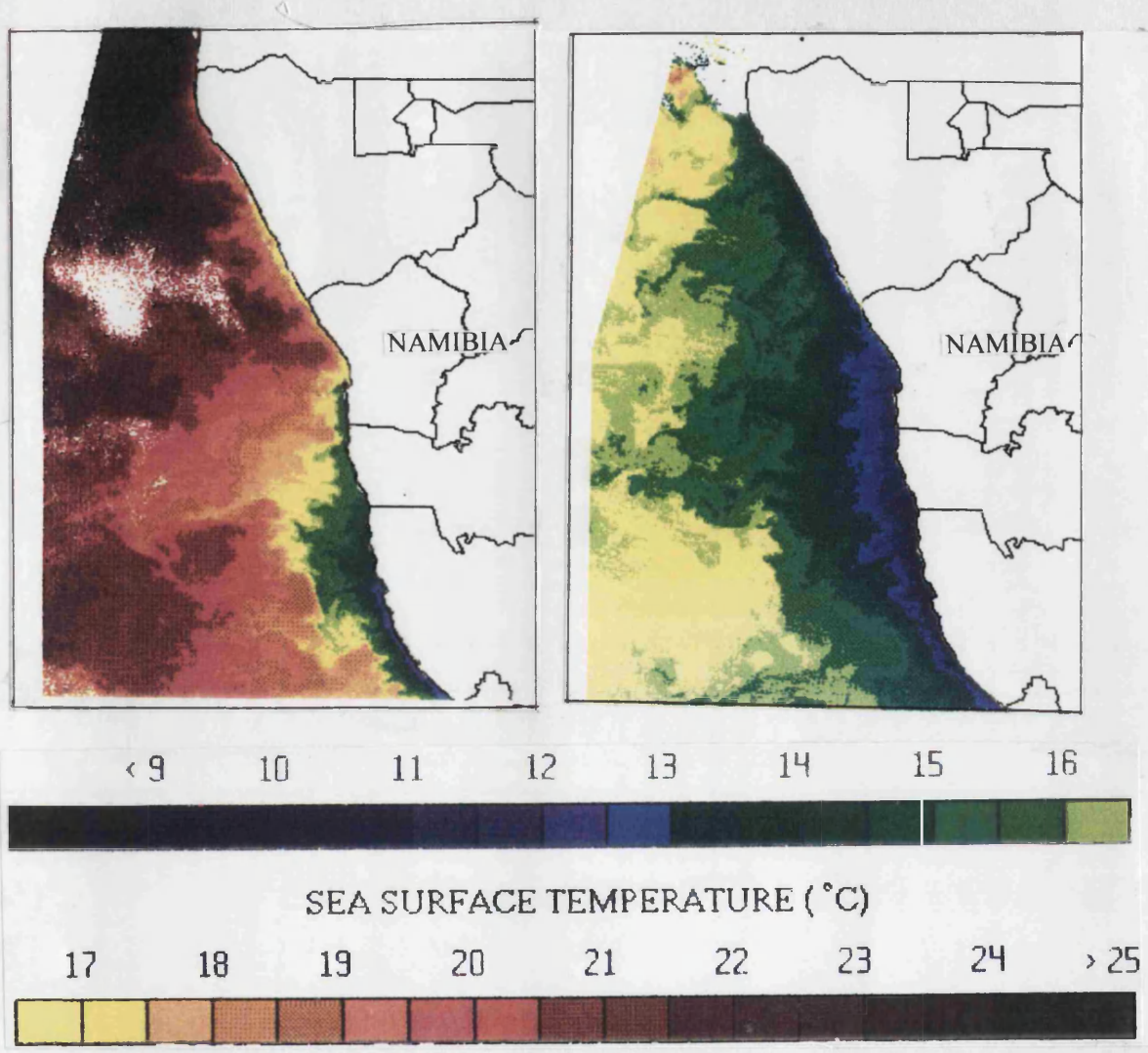

Figure 3: Satellite image of sea surface temperatures (SST) off Namibia. (i) was taken when the SE winds were weak and the upwelling was working poorly and (ii) when the SE winds were blowing strongly and the upwelling process was working well. (Source: MFMR)

Had the precautionary principle[6] been incorporated into management procedures, then the Pacific El Niño event should have served as an early warning of a possible warm event in the Benguela.

[6] The precautionary principle is being increasingly referred to in ocean management. It is regarded as 'soft law' in international environmental law, possibly on its way to becoming accepted as a norm of customary international law (Garcia 1994). It is difficult to define (MacDonald 1995) but in fisheries focuses on scientific uncertainty and related risk in decision making, on reversing the burden of proof on safe levels of risk and on giving priority to measures aimed at avoiding environmental degradation (Garcia 1994, p103).

Projections prepared for the Government policy White Paper on the fisheries sector (Namibia 1991a) reflect a linear improvement in fish stocks, clearly taking no account of the possibility of warm events and their impact on fish stocks.

The catch for all species dropped from 829 218 tonnes in 1993 to 553197 tonnes in 1996, the most depleted stock being pilchard, the catch of which dropped from 114812 tonnes in 1993 to 4236 tonnes for 1996 (MFMR/CSO).

While such events are not well understood, concern is being expressed that the extended period of El Niño conditions between 1993-5 could be a result of anthropogenically produced global warming. However, it may also reflect a natural variability of the climatic system and be part of a long term cyclical climatic pattern not that easily identifiable because of the paucity of long term data (Bergeron 1996, p15).

These events could be seen as an ocean equivalent of a terrestrial drought, where the plankton dies off or the species sensitive to small changes in ocean temperature do not survive and there is mass mortality up the food chain. Such a event interrupted the steady improvement in Namibia's fish stocks between 1993-1995 and another is likely to disrupt stock recovery in 1999 following the development of what could become the most extreme Pacific El Niño event on record during 1997/1998 (see Ch. 9, 2.1).

Managing the fisheries through such events is a critical part of the challenge of good fisheries management. This necessitates not only recognising the scientific message signalling the need drastically to cut the catch, but also having the economic flexibility in the industry to do so. Closer scrutiny in Chapter 7 of the decline in fish stocks during the 1990s demonstrates the importance of this.

2. Namibia's fish species

The FAO publication "The Living Marine Resources of Namibia" (Bianchi et al. 1993), a field guide for the country's fisheries, lists some 600 species of fish. It notes that this list is not exhaustive and includes only those it considers to be of present or future economic interest or that represent

important elements in the marine ecosystem. Relatively very few of these are exploited commercially.

About 90% by weight of the total catch of commercially exploited species fall into three major resource groups. Epipelagic shoaling species, pilchard and anchovy, are found inshore. The semipelagic Cape horse mackerel are harvested mainly by mid-water trawlers and the demersal hakes are the main species taken in the bottom trawl. The most important crustacean fisheries are those exploiting the deep sea red crab and the Cape rock lobster (ibid.).

2.1 Species caught in the bottom trawl

The most important of Namibia's fisheries, in terms of value, is the bottom-trawl fishery. Of the species caught within this fishery, the hakes are at present the most important, although it is possible that the deep water species, orange roughy and alfonsino, could challenge the position of hake in terms of value within the next few years.

There are two species of hake caught in Namibian waters. They are *merluccius capensis*, or Cape Hake, which occurs most commonly around the 200 metre isobath and make up about 90% of the catch; *merluccius paradoxus* or the deep water hake, which typically occurs in deeper water at about 350 metre isobath in the south and made up roughly 10 percent of the catch in 1990 but by 1996 made up 50% of the catch (see Ch. 7, 1.1.2). A third species, *merluccius polli* or Benguela hake, is found in northern Namibian waters but is not commercially significant. These species are caught mainly by bottom trawl or also by longline. The fishery fell outside of Namibian's territorial waters and was thus subject to open access conditions prior to Namibia's independence.

Hake spawn all year but more intensely in the spring and do so mainly between Cape Cross and Conception Bay. The larvae take six to eight weeks to develop. Juvenile hake become highly aggregated and form shoals of billions of fish. The shoals are found in inshore waters between 25 - 100 metres deep (Hamukuaya 1994b, p73). This biological characteristic of hake necessitated an adjustment to be made to the licence conditions for horse mackerel, preventing these mid-water trawlers from encroaching into water shallower than 200m north of 21° S (Jürgens 1994).

The Cape hake may grow to a length of about 110 cm and the deep water hake to the slightly larger size of 115 cm. Like the cod in the north Atlantic, they are now seldom seen at that size due to the year-class make up of fish in a mature fishery.

There are other demersal species of significant commercial importance because of the high prices they fetch, rather than because they occur in great abundance. They are the Cape Monk (*Lophius vomerinus*), one of the most valuable demersal fish species per unit of weight, which is both targeted and often found as by-catch when hake is being targeted. The catch of monk has risen sharply since independence from about 1499 tonnes in 1990 to 12 158 tonnes in 1994 (MFMR/CSO Basemod). Kingklip (*Genypterus capensis*), is most abundant between 250 and 350 metres depth and is caught in the bottom trawl as bycatch and by longline. It grows to a length of about 160 cm. Cape sole (*Heteromycteris capensis*) is taken as by-catch in bottom trawls but is common in shallow water between 1 and 25 metres (Bianchi et al. 1993 p179).

Considerable interest has developed in orange roughy (*Hoplostethus atlanticus*), with alfonsino (*Beryx splendens*) as a significant bycatch, both high value deep sea demersal species, found between depths of 400 and 1100 metres on the continental slope. There is no estimate yet of biomass, but experimental fishing of this species produced good results. A fifteen day cruise in February, 1995 by the vessel "Southern Aquarius" landed 293 tonnes of orange roughy with by-catch of alfonsino and cardenel[7]. In 1995, 6440 tonnes of orange roughy and 1125 tonnes of alfonsino were caught with 30 tonnes of other bycatch, giving a total for this deep sea bottom trawl of 7595 tonnes for that year. MFMR invited applications for participation in this fishery in the second half of 1996 and around 40 applications were received from which the Ministry selected five companies to participate in the fishery, two of which did not receive quotas pending more reliable assessment of the stocks (Moyo 1997a). Based on preliminary estimates, catches are expected to reach about 40 000 tonnes within the next few years (MFMR, personal communication, October 1996).

The management of this fishery will provide a particular challenge to the Ministry. The best scientific evidence available indicates that these fish first spawn when about 25 to 30 years old and live to be about 100 years. They also spawn in very dense shoals, making them easy to catch once

[7] Discussion with dockside officials, 28.2.95 noted by author.

the difficult techniques of trawling on the continental slope in deep water are mastered. These factors make this species particularly vulnerable to over-fishing. If the stock is damaged by over-fishing it would take many decades, and perhaps even centuries, for it to recover (Clark 1996).

2.2 The species caught in the purse-seine fishery

The pilchard are the main target species of the purse seine fleet. Anchovy and juvenile horse mackerel are secondary target species.

Pilchard (*Sardinops ocellatus*) are a coastal pelagic species which form large shoals and migrate seasonally into southern Angolan waters but seldom penetrate the biological barrier formed by the Lüderitz upwelling cell. The South African stocks of the same species of pilchard are found south of the Lüderitz upwelling cell. Only during periods of exceptionally weak upwelling do the two stocks mix at all. The adult pilchard feed upon phytoplankton and zooplankton while the juveniles feed on zooplankton (Bianchi et al. 1993).

Spawning of pelagic stocks occurs north and south of the Lüderitz upwelling cell, as the cool, turbulent water of the cell is not conducive to larval development (Crawford et al. 1987, p 354). Spawning thus occurs in Namibia in the central and northern areas. The older fish tend to spawn in the vicinity of Walvis Bay while the younger fish spawn in the warmer waters of the north (Bianchi et al. 1993, p4). Skippers will target shoals as close to the fish factories as possible as the catch will be delivered fresher and at lower cost. This has implications regarding year-class make-up of the catch.

There is no movement of pilchard from the western Cape to Namibia and minimal migration of Namibian pilchard to the western Cape coast according to tagging studies (Crawford et al. 1987, p355). The Namibian stocks move into southern Angolan waters under certain environmental conditions and when stocks are low and at their most vulnerable (Boyer et al. 1995, p1 and figure 5). The importance of co-ordinated management of the stock with Angola becomes even more apparent when the post-1990 management of this stock is examined.

As with many species of fish, a minimum spawning biomass is believed to exist for the Namibian pilchard stock at about one million tonnes (Thomas 1985). Thomas showed that when the biomass is above this level the chances of good recruitment are high but below this level the chance are slight.

The best estimates of the scientists indicate that the pilchard biomass is well below this level (Boyer et al. 1995).

Anchovy (*Engraulis capensis*) are also caught in the purse seine fishery and in some years are regarded as a significant by-catch. Like the pilchard, the juveniles feed on zooplankton while the adults feed on both phytoplankton and zooplankton (Bianchi et al. 1993, p 138). The Namibian anchovy spawn in the same areas as the pilchard but favour the more northern area where younger pilchard spawn.

Juvenile Horse Mackerel (*Trachurus Capensis*) are pelagic during the first two years of their lives before they are recruited to the main stock. Some 23% by weight of the horse mackerel catch during the period 1989-1993 was caught by the purse seiner fleet (MFMR/CSO Basemod). While a small portion of the juvenile horse mackerel, known locally as maasbanker, caught by the purse seiner fleet are used for human consumption they are largely reduced to fishmeal. This stock will be discussed in greater detail when the semipelagic stock is reviewed below.

2.3 The species of the Mid-water trawl

The main target species of the mid-water trawl is horse mackerel (*trachurus capensis*), which has been harvested from Namibian waters since the mid-1960s.

Horse mackerel spawn during the summer and autumn with peak activity between January and April (Klingelhoffer 1994, p79). The juveniles are found inshore up to the 200 metre isobath and the adult fish beyond the 200 metre isobath. They are opportunistic feeders and will consume a wide range of invertebrates and fish. They reach a fork length of about 60cm but are more commonly smaller (Bianchi et al. 1993, p158).

Chub mackerel (*Comber geoponics*) are also caught mainly in the mid-water trawl. They occur in coastal water throughout the water column up to about the 300 m isobath (ibid., p172). They grow to a fork length of about 50 cm and are also opportunistic feeders. They are caught mainly in the northern Benguela, that is, north of the Lüderitz upwelling cell.

2.4 Crustaceans

The commercially most important crustacean in the Namibian fisheries sector has been the Cape rock lobster (*Jasus lalandii*). This species is found mainly in the southern part of Namibia and lives on the rocky sea bed in depths up to about 70 metres. They are caught by lobster pots or hoop nets. They feed mainly on mussels and other invertebrates. Octopus are an important predator. Bianchi *et al*, referring presumably to the historic catch, note that this species "represents the world's largest catch (sic) for any single Jasus species" (ibid., p5).

The most important crustacean of the northern Benguela system is the deep-sea red crab (*Chaceon maritae*). It is generally caught with pots at depths of 300 to 700 m but is also a bycatch in the bottom trawl (Bianchi et al. 1993, p 43). Recent tagging survey results indicate that female crabs migrate to southern Angolan waters, again raising the importance of co-ordinated trans-border management (le Roux 1996, p7; further discussion in Ch. 7).

2.5 Species caught in the hook and line fishery

Although there are seven species of tuna found in Namibian waters, two are significant in the fishery. Albacore, also known as longfin tuna, (*Thunnus alalunga*) is the dominant species in the pole fishery and bigeye (*Thunnus obesus*) is dominant in the longline fishery. Tuna are highly migratory species and both these target species range right across the Atlantic, presenting particular management problems. Although the catches are relatively low by volume, they are significant for Namibia because of high prices these species fetch on international markets.

Albacore grow to a fork length of 130cm and feed on a wide variety of organisms but show preference for anchovy, pilchard and lanternfish (Bianchi et al. 1993, p172). Albacore are found between 10°S and 40°S in the south Atlantic (Penney et al. 1992) and they spawn off Brazil just south of the equator and in the central Atlantic (ibid.), where the surface temperature of the water exceeds 24°C (Shannon et al. 1989).

Bigeye tuna grow to a fork length of 200cm (Bianchi et al. 1993, p172) and range across the Atlantic between 45°S and 45°N and use the Benguela as a feeding habitat. Spawning takes place in the Gulf

of Guinea and in the east central Atlantic north of 5°N in the warmest season when the sea surface temperature is above 24°C (Rudomiotkinaa 1982).

Snoek (*Thyrsites atun*) are pelagic in coastal waters, preferring waters between 13°C and 18°C but are also caught in the mid-water trawl. They feed on anchovy and pilchard but in time of shortage are opportunistic. They grow to about 150cm (Bianchi et al. 1993, p170) . They migrate seasonally between the Agulhas Bank, south of Cape Town, to southern Angolan waters.

3. Key features of the Benguela

Key features emerge from this review of the Benguela ecosystem and the commercial fish species it supports. Namibia has a naturally very rich and productive marine ecosystem off its coast with very high primary productivity. It may be compared to a rich, lush region on land, capable of carrying large herds of wildlife. The Benguela ecosystem has a range of species that are commercially valuable and which have the potential of providing a rich renewable natural resource which Namibia could use to contribute significantly to its economic development.

This rich marine ecosystem may periodically be hit by the marine version of a drought, where the productivity and the carrying capacity are dramatically reduced. This may bring a very dramatic drop in the biomass with clear implications for the harvesting of the stocks.

By the time of independence the most important commercial stocks had been depleted. The rich fishing grounds had attracted large foreign fishing fleets under conditions of open access and increasing competition internationally.

Part Two: Pre-independence Over-exploitation and Decline

This second part of this chapter will review the pre-independence management of the fisheries sector, the growth of catches and the collapse of stocks, and will examine the pattern of ownership and control of companies benefiting from the resource before independence.

4. Pre-independence management of the fishery

The pre-independence management of Namibia's fisheries was profoundly influenced by a complex array of political-legal issues as a result of which two distinct regimes emerged. The inshore fishery, over which South Africa exercised some measure of control, arose from South Africa's de facto jurisdiction over Namibia. The offshore fishery, over which neither South Africa, as the de facto authority for Namibia, nor the United Nations as the de jure authority, were able to exercise jurisdiction, was in effect an open access fishery.

4.1 The legal regime

South Africa claimed jurisdiction over Namibia's waters in the exercise of the League of Nations mandate from 1920 and this, although disputed, was generally accepted by the international community until 1966 when the mandate was formally withdrawn by the United Nations General Assembly (UNGA 1966). South Africa claimed sovereignty over Walvis Bay and the off-shore islands as a result of British annexation, thus establishing a separate basis for jurisdiction over marine zones emanating from them.

The South African Territorial Waters Act (South Africa 1963) extended the territorial sea, referred to in South African legislation as 'territorial waters', from three to six nautical miles and established a fisheries zone of 12 nm from the baseline. The Act also defined "the Republic" to include Namibia. The entire Namibian coastline from 1963 thus had a 6 nm territorial sea and a fisheries zone which extended 12 nm from the baseline. The status of Namibia's marine zones were to become much more complex in the 1970s.

In 1977, the South African Government amended the Act to extend SA territorial waters to 12 nm and the fisheries zone to 200 nm (South Africa 1977). The 'Republic' was not defined but the Act specifically indicated that Namibia's waters would be left as they were under the 1963 Act. South Africa, however, regarded Walvis Bay and the islands as part of South Africa, as opposed to part of the mandated territory. This created a patchwork of Namibia's waters as indicated in Figure 4 below.

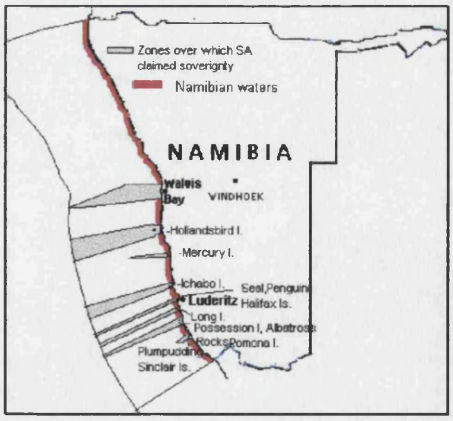

Figure 4: South African claims over waters off Namibia and Namibia's 6nm territorial sea and further 6nm fisheries zone at independence beyond the territorial sea. Adapted from Berat 1990, p197.

In practice, South Africa never managed to enforce jurisdiction over these patches of sea over which it claimed jurisdiction up until independence. Sovereignty over Walvis Bay and the islands was contested (SWAPO 1975) and, therefore, jurisdiction over these waters stood to be challenged by the flag states of foreign fleets. Had South African sovereignty not been questionable, enforcement would still have been virtually impossible unless it was in the context of creating similar zones for Namibia and enforcing jurisdiction over these adjacent zones simultaneously. This was also not possible as foreign fleets were not going to accept South African jurisdiction over a rich fishing ground to which they enjoyed free and open access.

These convoluted legal positions seemed to have had little practical direct impact as policing of the inshore fishery was minimal and of the off-shore fishery, non-existent. On the other hand the policing of the fisheries may well have been different had the legal position been unambiguous and in favour of the de facto power within Namibia.

Doubts existing over future access to the fishing grounds would arguably have created an added incentive to extract as large a harvest as possible lest access to the fishing grounds was later denied.

4.2 The management system

4.2.1 The inshore fishery

Prior to Namibia's independence, the South African Government, as the de facto authority for Namibia, either directly or through its local administration in Windhoek, were unable to extend control of the fisheries beyond the 12 nautical mile fisheries zone. Thus the offshore fisheries beyond the territorial sea were not managed by the local administration. The South African administration of Namibia's territorial sea was just as illegal as its occupation of Namibia, but the South African Government retained limited de facto control over fisheries within that zone.

South Africa's administration of Namibia's fisheries went through different phases. The first major commercial fishery was for rock lobster and began in 1922. Up until the Second World War, the only fin-fish caught commercially in Namibia's waters was snoek, a species that migrates seasonally between southern Angolan waters and the Agulhas Bank, south of Cape Town.

After South Africa was charged by the League of Nations with the administration of the mandate for Namibia in 1920, it established a local administration which assumed responsibility for the fisheries as they developed.

In response to the demands of the international community that it cease its illegal occupation of Namibia, expressed formally through the General Assembly and the Security Council, the South African Government defiantly decided in 1969 to establish more direct control of Namibia by transferring to central government in South Africa a range of powers that had been exercised by the Windhoek administration. These powers included jurisdiction over fisheries management decisions, specifically the total allowable catch (TAC) and quota decisions for Namibia's territorial waters (O'Linn and Twohig 1992).

A decade later, in 1979, again in response to the ebb and flow of international pressure, the South African Government transferred certain powers back to the Namibian administration in order to demonstrate that the South African Government had already established, under its own authority, what the UN was demanding should happen under the auspices of the United Nations.

The administration of certain sections of the Sea Fisheries Act of 1973 were transferred from the South African Government to be administered by an official in Windhoek, who was seconded from the South African fisheries authority. Foreign relations in fisheries matters and administration of research funds were not transferred back to Windhoek.

However, in 1983 South Africa established a fisheries section in Namibia and transferred fuller administrative responsibility to Windhoek for the territorial sea. South Africa claimed de jure sovereignty over Walvis Bay and the off-shore islands and thus also claimed territorial seas and EEZs emanating from them. On this basis South Africa claimed a right to set jointly with Namibia a TAC for the Namibian fisheries which it would then share with Namibia. In 1988, when political events were clearly leading to the implementation of the UN plan for Namibia's independence, the South African Government formalised the position. It claimed sovereign rights over 14% of Namibia's waters and thus claimed 14% of the Namibia's TAC (ibid., p22).

South Africa's de facto jurisdiction governed only the twelve nautical mile territorial sea and fisheries zone, but beyond that, Namibia's waters were considered the high seas to which there was open access. The South African Administrator General in Namibia went through the motions of proclaiming a 200 nm EEZ for Namibia on 1 April 1981 by enacting Proclamation AG 32 of 1979, read with AG 12 of 1981 but the zone received no international recognition (ibid, p23).

In 1987 fishing concessions in Namibian waters were granted for a period of seven years. The set of criteria established at the time meant that, on the whole, the old established beneficiaries of quotas were awarded the new concessions. The Namibian Government was constitutionally obliged to honour this commitment which ran out at the end of 1993.

4.2.2 The offshore fishery

The International Commission for South East Atlantic Fisheries (ICSEAF) was formed in October 1969 with encouragement from the UN Food and Agricultural Organisation (FAO) and was open to any state that wished to join. ICSEAF was based in Madrid, reflecting the dominant interest of Spain in the activities of the organisation. Catches had been increasing rapidly in previous years with the crucial hake catch reaching over 600 000 tonnes in 1968, with an increasing number of fleets becoming interested in the fishery (Moorsom 1984a, p34). The first working meeting of ICSEAF

did not take place, however, until April 1972. Its purpose was to provide flag state governments with a means of collectively governing the fisheries, of pooling scientific research and agreeing to regulatory measures. Although modelled on other international fisheries conventions, such as the International Convention for North Atlantic Fisheries (ICNAF), it had, in practice, some critical differences. Not only was the principal coastal state, Namibia, not dominant in the organisation, it was not even a participant. South Africa was considered one among some 17 member states and the United Nations Council for Namibia, the internationally recognised authority for Namibia, was not represented. Its focus was Namibia's fishing grounds and, in practice, was not regional.

A range of restrictive measures were adopted by ICSEAF after 1975: Minimum mesh sizes of 110cm for hake nets and 60cm for other species were established, catch quotas and limits on hake by-catch when other species were the target species were agreed upon. ICSEAF, however, remained an ineffective organisation for managing the fishery. By the end of the 1980's, the hake catch was made up largely of juveniles (Stuttaford 1990, p129; MFMR, 1991). It was alleged that small mesh liners were being fitted to the cod-end of the hake nets enabling smaller fish to be caught and that markets were being deliberately created for small hake in Spain (Stuttaford 1990).

ICSEAF's objective ostensibly was to control the exploitation of fish in international waters off Namibia and it allocated quotas to its members, one of which was South Africa. In the mid-1980s, the Windhoek administration reached an agreement with South Africa over the division of ICSEAF allocations and over control of factories and fisheries infrastructure in Walvis Bay.

Despite the poor state of the hake stock, the fisheries administration in Windhoek encouraged increased Namibian participation in the off-shore fishery. A total quota of hake for Namibia was calculated as follows for 1986: South Africa was allocated 31 357 tonnes from Namibian waters by ICSEAF. Namibia claimed a right to 10% of ICSEAF's total allowable catch of 481 000 tonnes for that year. The sum of the two quantities was 79457 tonnes of which South Africa claimed 19 845 tonnes leaving 59612 tonnes for the Windhoek authorities to allocate to particular companies. The Namibian fleet did not manage to catch anywhere close to the allocated quota, as is evident for subsequent years from Table 3 below.

The independence of Namibia brought political change which made possible fundamental changes in the management of the fisheries. This is discussed further in Chapter 5.

5. A history of exploitation

Although management of the inshore and the off-shore fisheries was very different, the targeted fish stocks share the common feature of being heavily exploited to the point of depletion, with the exception of the relatively low valued horse mackerel stock. Foreign owned fleets largely profited from this over exploitation.

5.1 The inshore fishery - domestic mis-management

5.1.1 The purse-seine fishery: its rise and decline

The **pilchard** catch grew from 1000 tonnes in 1948 to 262 000 tonnes by 1953. In the mid-1940s fishmeal plants and canneries began operating around Cape Town. The South African companies became interested in the Namibian fisheries and by 1953 six fishmeal and canning plants had been established in Walvis Bay, all by South African companies, five of which had already established plants in South Africa. They were *Ovenstones*, owned by a leading Cape business family of that name; *Sea Products*, which shortly after this became part of the United Oceana Group; *Mid-Western,* later called Cape Kunene, controlled by the South African entrepreneur AP du Preez; and *Marine Products*, a subsidiary of the giant South African Federale Volksbeleggings. SWAFIL, a subsidiary of the state owned South African *Fisheries Development Corporation* was the only factory which had not yet established a processing plant in the Cape (Moorsom 1984a).

The dramatic collapse of the Californian sardine fishery had been noted and the need for restrictions was recognised by the head of the General Division of the South West Africa (SWA) Administration, Mr. John Keun. In the absence of any scientific knowledge of the stock, Keun succeeded in persuading the SWA Administration to restrict the catch to one third of the size of the Californian sardine catch in 1936 (Lees 1969, p177), calculating that the fishing grounds off Namibia were about one third of those off California. The catch thus remained at about 250 000 tonnes until 1959 when Keun retired. Keun essentially adopted a precautionary approach because of scientific uncertainty regarding the stock, setting the TAC at a low level despite the stock's apparent abundance (ibid., p178). Lees notes that "no factory ever failed to fill its quota" during this period (ibid.)!

The quota was nearly trebled between 1960 and 1964, a development reflected in Figure 5. There was a spawning failure in 1963, due to an environmental perturbation. This lead to no recruitment to the stock taking place that year and the stock was then not able to sustain such excessive fishing effort. (Stuttaford 1990, p119).

In 1965 the South African Government licensed three South African companies, which had not been granted licenses to open plants in Walvis Bay, to operate two large factory vessels, each with their own flotilla of fishing vessels, to fish the same stock, supposedly just outside the Namibian 12 nm fishing zone. The local SWA Administration responded by dramatically increasing the quotas of five of the eight land based factories. The catch in 1968 reached a peak when the two factory vessels reported catches of 558 000 tonnes and the shore factories 829 000 tonnes, a total declared catch of 1 387 000 tonnes. Stuttaford, a long standing writer on the fisheries of southern Africa, is of the opinion that the real catch was probably more that 2 million tonnes "as a result of malpractice and undeclared foreign hauls" (Stuttaford 1990, p119). The catch dropped slightly to 1 110 000 tonnes in 1969. This was followed by a dramatic collapse the following year and, within a decade, the catch was down to 10 837 tonnes in 1980. Figure 5 illustrates how the pilchard stock has never recovered from the collapse of the 1960s and 1970s.

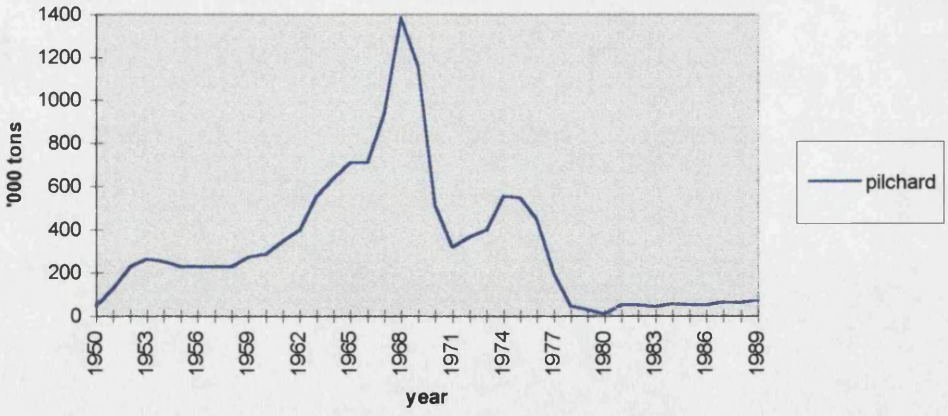

Figure 5: Pilchard catch pre-independence. Data source: ICSEAF reports.

The pilchard biomass collapsed from about 6 million tonnes in 1967 to about 1.5 million tonnes by 1970. Following an improvement in the biomass in 1972-3 as a result of good recruitment linked to favourable environmental conditions, the biomass then collapsed further to about 100 000 tonnes in 1978.

The South African Government took over direct responsibility for the Namibian fishery in 1969 as part of a general transfer of government functions from the administration in Namibia to South Africa. In 1978, however, the Pretoria Government decided to hold elections in Namibia in defiance of United Nations Security Council Resolution 435 (1978), which required South African withdrawal from Namibia, the holding of elections under United Nations supervision and control followed by independence for Namibia. Following this exercise South Africa established a government in Namibia and attempted to project it as increasingly autonomous as part of its political game being played out with the United Nations. This process resulted in the return of government functions to the Windhoek administration, including those of fisheries management.

Following the return of the fisheries administration to Windhoek in the late 1970s and the establishment of a Fisheries Directorate in the administration in the mid-1980s, the administration in Namibia established a 'Namibia first policy'. It required in 1987 that companies applying for concessions to fish should arrange for 30% of their shareholdings to be held by Namibians and that this percentage should increase by 10% per annum until it reached 70%. Other criteria for the application of quotas were introduced in 1988. Reinvestment of earnings in Namibia, greater participation by Namibians in the industry, job creation and the level of taxation flowing into the Namibian coffers were included (Stuttaford 1990, p123). The industry was also called upon to market its products from a domestic Namibian base instead of through the cartel operating out of Cape Town. Thus Atlantic Canned Fish Sales was formed from Federal Marine Namibia in May 1987, and the Fish Meal Marketing Company and Fish Oil Marketing Company, both registered as Namibian companies in 1977, were revived. The new arrangements, however, constituted nothing more than the continuation of operations by the South African cartel which still continues to function much as it did in the past.

Anchovy: Catches were stable during the 1970s at about 200 000 tonnes per annum, dropped dramatically in the early 1980s, then rose from 16 000 tonnes in 1986 to 376 000 tonnes in 1987 and have since been low (MFMR/CSO). The sudden rise in the anchovy catch in 1987 was only as a

result of the South African stock, which spawns on the Agulhas Bank, producing a particularly strong year class, a portion of which then breached the natural barrier of the Lüderitz upwelling cell (Stuttaford 1990, p123). The Namibian anchovy stock remains small and variable and has not been subject to quota restrictions since 1986 (ibid.).

5.1.2 Ownership and structure of the purse-seine fishery

In the mid 1980s the decision was made by the fisheries administration in Windhoek that 70% of the TAC was to be caught by companies with processing rights, and 30% by private boat owners based in Namibia who had been given exploitation rights (O'Linn and Twohig 1992). This latter group was made up of 12 boat owners. In 1987 applications were invited for processing rights in the pelagic industry to whom the remaining 70% of the TAC would be made available. There were 144 applications but only nine were successful and are listed in Table 1below.

Company name	**Beneficial Namibian Ownership***	**Pilchard quota**			
		1987	**1988**	**1989**	**1990**
Consortium Visserye	88%	6000	6000	7892	9708
Etosha Fishing	0%	3000	3000	4204	6701
General Development	0%	6000	6000	7462	10836
Kuiseb	0%	1000	1000	1000	1500
Namibia Sea Products (Oceana)	74%	1800	1800	2574	4471
Namib Fisheries	90%	5400	5400	6002	8896
Sarusas	39.5%	5400	5400	7292	9705
Namibia Fishing Industries Previously Swafil	8.2%	1800	1800	2574	4471
Public company yet to be formed	100% (state owned)	4000	4000	4000	none

Table 1: Pilchard quotas prior to independence. Source: Figures extracted from the Appendix 2 of O'Linn and Twohig 1992; Stutterford, 1990, pp123-124. * Indication of beneficial ownership in 1991, the year after Namibia's independence, as given to Commission of Enquiry.

The pattern of ownership reflected in the table describes the position as it stood in 1991; there was considerable discussion about the policy position towards which the Namibian Government was still working, of favouring Namibian owned companies. Use of nominee shareholders with Namibian

addresses was coming into greater use, disguising beneficial ownership[8]. Apart from 'the public company yet to be formed', *Consortium Visserye*, which was owned and still is owned by the wealthy List family of German descent, and *Namib Fisheries*, which was owned by three individuals who at the time of independence were Spanish and Portuguese nationals, the industry was largely owned and completely controlled by South African interests.

5.1.3 Rock lobster fishery: its decline

Rock lobster have been commercially exploited in Namibia since 1922. Catches were high during the 1950s and 1960s ranging between 4 000 tonnes and 13 000 tonnes, then dropped to about 1 500 tonnes in the 1970s. By the time of independence in 1990, annual catches had declined to 576 tonnes (Grobler 1994, p 93). The decline is graphically presented in the Figure 6 below. It should be noted that this species is slow growing and it will take many years to rebuild the stock to enable harvesting at its optimum level.

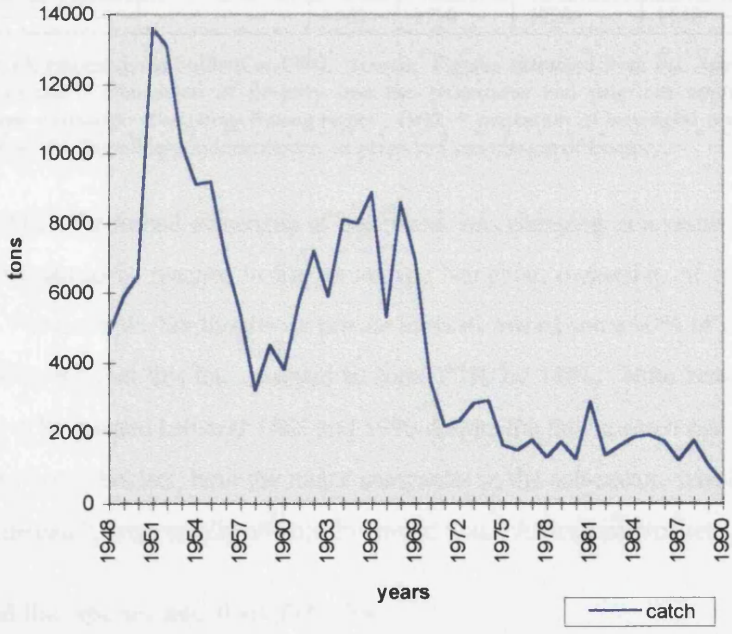

Figure 6: Pre-independence rock lobster catches. Source: data Basemod, MFMR

[8]. This is a major problem with the ownership of Namibia Sea Products and Namibia Fishing Industries, discussed in more detail in Chapter 8.

5.1.4 Ownership and structure of the rock lobster fishery

The greatest beneficiaries of the resource were South African companies. Less that 10% of quotas were made available to 10 small Namibian operators, an innovation made in 1987. This is summarised in Table 2 below.

Company	Beneficial Namibian Ownership*	Quotas in tonnes 1987	1988	1989	1990
Lalandii (Pty) Ltd	0%	454	540	540	565
Seaflower Lobster Corp. Ltd	33.1%	908	1080	1080	883
Eiman, N.	100%	10	10	10	10
Harris, M.	100%	10	10	10	10
Kakoro, H.	100%	10	10	10	10
Mukapuli, S.	100%	10	10	10	10
Murtz, E.J.	100%	10	10	10	10
Pius, S.	100%	10	10	10	10
Schoroeter, J.A.	100%	10	10	10	10
Temmers, B.	100%	10	10	10	10
Temmers, P.	100%	10	10	10	10
Von Ast, R.I.	100%	10	10	10	10
Total		1462	1720	1720	1548

Table 2: Rock lobster quota holders in 1990. Source: Figures extracted from the Appendix 2 of the report of the 'Commission of Enquiry into the procedures and practices applied in the allocation and utilisation of existing fishing rights', 1992. * Indication of beneficial ownership in 1991, the year after Namibia's independence, as given to Commission of Enquiry.

It should be noted that the formal ownership of companies was changing as a result of a policy that required certain targets to be reached in the percentage Namibian ownership of companies in the fishing industry. For example, South African private interests owned some 90% of Lalandii in 1990 (Ombudsman 1990) but that this had changed to some 77% by 1991. Note how relatively high quotas continued to be granted between 1988 and 1990 despite the falling catch rate. Leaving aside the small 10 tonne quota holders, both the major companies in the sub-sector, which between them processed the entire catch, were wholly or majority owned South African enterprises.

5.1.5 Hook and line species and their fisheries

Snoek, the most important species in the hook and line fishery, were for many years after the Second World War the target species of a Cape Town based snoek schooner fleet which worked the west coast from Cape Town to the Angolan border. Canned snoek from southern Africa was sold on the British market (Lees 1969). The Soviet mid-water trawl fleet reportedly caught some 61 000 tonnes

of snoek out the 71000 tonnes total for the entire south east Atlantic in 1983 (Stuttaford 1990, p129). This was not sustained in subsequent years and was said to have damaged the local industry (ibid.).

5.2 The offshore fishery - a global free-for-all

5.2.1 The bottom trawl fishery: near destruction of a rich resource

The Namibian fishing grounds held great attraction for foreign distant water freezer fleets. This was the case in the 1950s and 1960s which saw phenomenal growth of global distant water fleets. These vessels have the processing and freezing plant on board the vessel, giving them a world-wide range, completely independent of the coastal state in whose waters they are fishing. This makes it possible for them to deplete a fishing ground, yet safeguard their investment by moving elsewhere.

During the 1970s particularly, a large number of coastal states declared exclusive economic zones of two hundred nautical miles from their coasts. Because of the illegal nature of South Africa's occupation of Namibia, these fishing grounds were regarded as international waters. Namibian waters were, therefore, seen as the last major fishing grounds in which open access was still possible and which was not subject to the control or taxation of a coastal state.

Vessels from Spain and the USSR were the first foreign trawlers to enter the Namibian hake fishing grounds in 1964. These were followed by Bulgaria, Israel and Japan the following year, Belgium and East and West Germany in 1966, France in 1967, Cuba in 1969, Rumania and Portugal in 1970, Poland in 1972, Italy in 1974, Iraq in 1979, Taiwan in 1981 and South Korea in 1982 (Stuttaford 1990). The USSR and most of the east European states pulled out of this fishery in the early 1980s so that by 1990 it was the large Spanish fleet that was taking virtually the entire catch by foreign vessels.

The fisheries statistics treat the two hake species together because of identification difficulties (Bianchi et al. 1993, p4). Figure 7 shows how the total hake catch grew rapidly from the 47 600 tonnes, declared in 1964, to the 815 000 tonnes declared in 1972, the highest hake catch ever declared in Namibian waters (ICSEAF 1983, 1986, 1987, 1989). There was a general downward trend in catches after that until 1980 when the declared catch was 156 300 tonnes (ibid.). Catches then again rose until 1985 but declined throughout the rest of the decade. Tonnage was maintained at that level as a result of a progressively higher percentage of the catch being juveniles. The declared

catch in 1988 was 305 720 tonnes (ibid.). The estimated catch in 1989 was 292 943 tonnes of hake (MFMR/CSO) when the fishable biomass was estimated at 500 000 tonnes (Hamukuaya 1994b, p74)! In 1990 some 83% of the catch were reported to be juveniles, a serious warning of imminent stock collapse (MFMR, 1991). Figure 7 illustrates the history of the hake catch but hides the collapse, as it does not reveal how the catch was maintained at a high level by fishing smaller and smaller fish while the fishable biomass was collapsing.

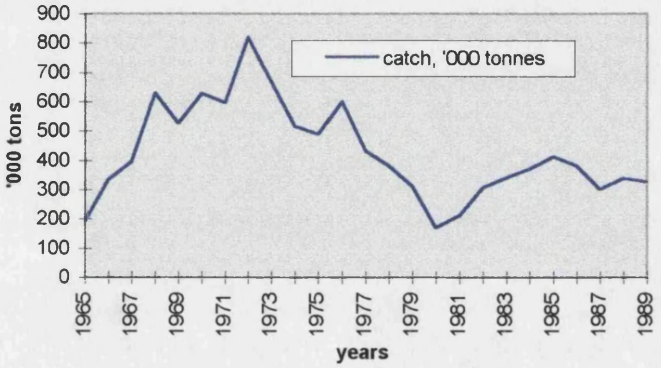

Figure 7: :Pre-independence hake catch. Source ICSEAF Statistical Bulletins

As coastal states in the region declared their own EEZs, Namibia's fisheries, and more particularly the hake fishery, became ICSEAF's sole preoccupation. ICSEAF agreed to establish a national quota system for its members only in 1977 (Stuttaford 1994, p14) but were never able to agree on limiting effort. The number and size of their trawlers sent into Namibian waters were able to fish well in excess of the quota the country had received. Although quotas were set, they bore little relationship to the catch. Scientific research results were ignored (ibid.) and were even falsified (Jürgens 1995).

From 1965 to 1989, according to the declared catch reflected in ICSEAF statistics, 10 664 600 tonnes of hake was removed from Namibian waters, valued at 1996 prices at N$64 862 million (US$15 084 million)[9]. Virtually nothing of this accrued to Namibia! In addition, future production was lost as it would take some 10 years of careful conservation before the hake stock has recovered

[9] Using data in Ch7, Table 10, conversion factor 1.46 (Namibia 1993a, p53 Annexure Q) to obtain whole fish equivalent price of N$6082/tonne. Using the average exchange rate for 1996 of N$4.3 to U$1 (South Africa 1996-1997).

sufficiently to be harvested at about its estimated maximum sustainable yield (MSY) of 350 000 (Namibia 1991a)

5.2.2 Ownership and structure of the Namibian based hake fishery

Prior to 1990 the Namibian fleet played a minor role in the hake fishery where the dominant fleet was that of Spain at the time of independence. Domestic catches for most of this period were negligible but rose to 10 000 tonnes in 1982, climbed to 58 000 tonnes in 1985 then, in the face of declining stocks and competition from the foreign trawler fleet, dropped again to 13856 tonnes in 1989 (Stuttaford 1990, p 126). The Namibian catch was less than 15% of the total catch at its highest point in 1985.

Company	Beneficial Namibian Ownership*	Quotas in tonnes 1987	1988	1989	1990
Benguela Sea Products	55.5%	500	500	10 000	1500
Cadilu Fishing (Pty) Ltd	70%	-	500	1000	5000
Caroline (Pty) Ltd	60%	3000	1500	1500	1500
Cato Fishing (Pty) Ltd	100%	1000	1000	2000	1500
Consortium Fisheries Ltd.	88%	1000	1000	500	5501
JMPR De Pao	100%	500	500	100	1000
Freddie Vissery (Pty) Ltd	100%	2000	1000	500	1000
Blue Agra (Pty) Ltd	0%	1000	500	2500	1000
Inter-Namibia Trawling (Pty) Ltd	26%	2000	1000	-	-
Kuiseb Fish Products Ltd	0%	20000	20000	20000	4190
Namcoast (Pty) Ltd	100%	6000	500	500	1000
Namib Fisheries Ltd.	90%	2000	2000	1000	2000
Northern Fishing Industries (Pty) Ltd	8.2%	1000	500	500	-
Overberg Fishing Co Ltd	55%	500	500	500	3000
Pescanova Fishing Industries (Pty) Ltd	0%	500	8000	8000	5000
Skeleton Coast Trawling (Pty) Ltd	0%	4000	5000	5000	5000
Sea Harvest Corporation of Namibia (Pty) Ltd	0%	10000	6000	8000	1000
Total quotas granted by Namibia authority		55000	51000	52100	58980
Total Catch form this domestic quota		30531	25559	13856[a]	53404**

Table 3: Hake quota holders in 1990...Source: Figures extracted from the Appendix 2 of the report of the 'Commission of Enquiry into the procedures and practices applied in the allocation and utilisation of existing fishing rights', 1992;. * Indication of beneficial ownership in 1991, the year after Namibia's independence as given to Commission of Enquiry. [a] includes 616 tonnes caught by long line. **In 1990 there was a decrease in the catch of foreign vessels.

Table 3 above gives details of the ownership as it was in 1991 of the Namibian based companies that had been granted concessions in 1987 to fish for hake. The relevance of these data relates to the distribution of the new rights of exploitation in 1993, discussed in Chapter 8.

The development of trawling for hake by Namibian based vessels was encouraged by the local administration. Despite the depleted state of the hake stock, an attempt was made to assert the right of local fishing interests to the stock that remained, putting the locally based fleet in competition with foreign trawlers.

It should be noted that, while formal ownership of the Namibian based companies in this sub-sector was mixed, there was a substantial non-Namibian interest in the fishing industry. The most important point to note, however, is that the bottom trawl fleet was overwhelmingly not Namibian based and was owned by Spanish Companies based in Spain.

5.2.3 The Mid-water trawl

Horse mackerel has been harvested from Namibian waters since the mid-1960s. Catches were under 100 000 tonnes until 1970, then fluctuated between 200 000 tonnes and 500 000 tonnes per annum in an upward trend for most of the 1970s (Figure 8). The catch peaked at 660 000 tonnes in 1982 and then remained mostly between 400 000 - 550 000 tonnes for the remainder of the decade.

This is a low value species which, before independence, was caught almost exclusively by a fleet of large Atlantik Class Soviet super-trawlers of which there are now far fewer in Namibian waters than before independence. The impact of the international political economy of fisheries and particularly the impact of the demise of the Soviet State, has had considerable consequences for this fishery (see Ch. 5). The problem of suitable trawlers for catching this species in Namibian waters remains unresolved.

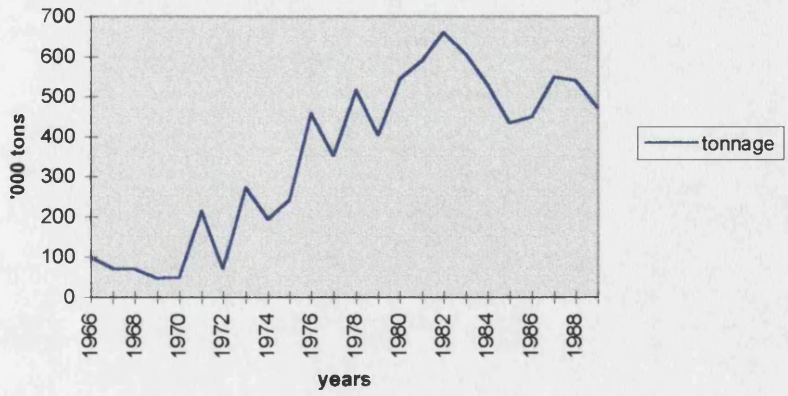

Figure 8: Horse mackerel: pre-independence catch. Source: ICSEAF 1983,1986, 1987,1988; FAO Yearbook Vol. 60.

Of the 518 074 tonnes of horse mackerel caught in Namibian waters in 1987, 484 065 tonnes was taken in the midwater trawl by foreign vessels. The remaining 34 009 tonnes was caught by the Namibian based purse seine fleet as juveniles and reduced to fishmeal. This represents a typical pattern of exploitation for this species in the Namibian fisheries.

5.2.4 Deep sea red crab fishery

Deep sea red crab (*Chaceon maritae*) were heavily exploited in the unregulated fishery before independence. The catch peaked in 1983 at about 10 000 tonnes then in subsequent years levelled off to between 7000 and 8000 tonnes (Beyers 1992, p.1). Deep sea red crab are caught on the continental slope in a relatively narrow bathymetric corridor between 350-900 metres deep. This stock has a high unit value and were caught for the Japanese market.

5.2.5 Tuna fishery

Reported catches of **tuna** in Namibian waters have increased since independence. This probably does not represent an increase in harvesting from the stocks as these catches were not recorded as Namibian catches before independence, as the fishery fell outside of the 12 nm zone.

Albacore (*thunnus alalunga*) makes up 95-95% of the total tuna catch in Namibian waters although bigeye (*Thunnus obesus*) also constitute a significant catch. Yellowfin tuna (*Thunnus albacares*) and skipjack (*Katsuwonus pelamis)* are caught as bycatch (Lehmensiek 1995).

Bigeye are caught mainly by longline in Namibian waters and constitute 90% of the long line catch (ibid.). The tuna longline fleet operate mostly between 17°S and 20°S.

6. Conclusion

This chapter has given some basic detail about the Benguela ecosystem and describes the geographic, oceanographic and meteorological features that make the ecosystem so productive and able to sustain large stocks of fish. These high levels of productivity can fail during a warm, 'Benguela Niño' event which, it is argued in this thesis, is a key consideration in successful management of the fisheries.

A description of the most important commercial fish stocks is presented and the pre-independence history of their exploitation, for the most part, to the point of depletion, is reviewed.

The chapter has demonstrated how the political-legal conditions pertaining before Namibia's independence made effective management of Namibia's fisheries difficult, if not impossible. The main beneficiaries from the resource prior to Namibia's independence were foreign fishing interests. South African companies dominated the inshore fishery and a number of other foreign fleets, particularly those of Spain and Russia and to a lesser extent Japan dominated the off shore fishery at the time of independence. Namibians gained very little benefit from its fisheries resources and those that did were mainly from a privileged and wealthy part of Namibia's apartheid society.

Chapter Three

COMMON POOL FISHERIES RESOURCES:

REGULATION AND THE STATE

This chapter seeks to identify more succinctly the nature of the problem and to explore the theoretical ideas that inform our understanding of it.

The first part of Chapter 2 draws attention, inter alia, to the nature and productivity of the Benguela ecosystem and its commercially valuable fish stocks, while the second part focuses on the pre-independence over-fishing of Namibia's commercial fish species and the extent to which the benefit of this destructive exploitation accrued substantially to foreign interests.

This establishes that the Namibian fisheries resources are a very valuable asset which could be used to make a considerable contribution to Namibia's development. It also establishes that the resource had been seriously depleted prior to the country's independence and that Namibia and Namibians gained very little from it.

The first of these two distinct problems offers a classic example of the result of a competitive over-exploitation of a common pool resource. The bio-economic model of a fishery offers a generalised tool for understanding the dynamics of a fishery and demonstrating the compatibility of biological and economic optimisation in the use of the resource. Thus this chapter first examines the bio-economic dynamics of the fishery which emphasises the need to limit access to the resource if optimal use is to be made of it.

Optimising the use of fisheries resources calls for state regulation. Likewise, state intervention is required in addressing the social objective of directing benefit from this resource more towards Namibians and particularly towards the previously socially deprived part of Namibian society. This then raises the issue of what the role of the state should be in the management of Namibia's fisheries.

Thus the chapter will then examine the impact and implications of regulation of a fishery by the state, followed by consideration of the contribution of the literature on the role of the state in informing the fisheries management debate.

1. The problem of exploiting common pool fisheries

The general problem of common pool resources can be demonstrated through the dynamics of a common pool fishery.

1.1 Negative externalities in the exploitation of a commons

The essence of Hardin's presentation of the problem of the commons is that, because each appropriator of an open access common pool resource considers benefits accruing against only the private costs and not the social costs of his or her actions, there is a tendency towards depletion of the resource which may reach the point of extinction (Hardin 1968, p1244). The challenge is clearly to make the externalities which exist endogenous.

Hardin's remedy is simple: "the commons, if justifiable at all, is justifiable only under conditions of low population density" (ibid., p1248) and he proceeds to argue for privatisation of the commons. The only other remedy in his view is repressive government action.

Hardin assumes that those using the common pool resource cannot or will not erect effective institutions to protect the resources on which their lives depend. He also assumes that appropriators from a common pool resource are necessarily individualistic profit maximisers driven by economic goals to overexploit the resources on which their livelihoods depend despite the interests of society as a whole.

A second model used to explain the tendency towards non-viable exploitation of natural resources is the outcome of Mancur Olson's challenge (Olson 1965) to the optimism expressed in group theory that individuals with common interests would voluntarily act to defend those common interests. He uses the free rider problem to explain why individuals have little incentive to contribute voluntarily to the provision of a good that benefits the whole group. Olson argues that

> "unless the number of individuals is quite small, or unless there is coercion or some other special device to make individuals act in their common interests, rational self-interested individuals will not act to achieve their common or group interest" (ibid., p2).

While Hardin does not acknowledge the possibility of a common pool resource being successfully managed co-operatively by the appropriators, Oslon recognises this possibility but only in very limited circumstances.

The third model used to explain the commons problem is the prisoner's dilemma game (Dawes 1973). Dawes structures the game as a non co-operative game in which all players possess complete information. He demonstrates how when all players choose their dominant strategy, the outcome is Pareto inferior and, thus, that individually rational strategies lead to collectively irrational outcomes. This may be seen essentially as a formal presentation of the Hardin analysis.

1.2 The dynamics of a fishery: the problem of negative externalities

The essence of these arguments was widely recognised in the fisheries literature written in English more than a decade earlier and as far back as 1911 in an article by Jens Warming written in Danish (Warming 1911).

It is now generally accepted that open access organisation of ocean fisheries is economically wasteful because of the existence of externalities. This position of modern fisheries economics is generally traced back to H. Scott Gordon (Gordon 1954) and Anthony D. Scott (Scott 1955), who clearly define the problem in the fisheries sector. Both use the well-known biological model developed by Schaefer (Schaefer 1954). It would seem that neither Gordon nor Scott were aware of the article by Jens Warming, in which Warming had come to almost identical conclusions to those of Gordon some forty three years earlier.

1.2.1 Virgin stocks, natural equilibrium and surplus growth

Many fish stocks have been harvested from time immemorial and have proved capable of withstanding human predatory activity, provided that the limits of self renewal of the stock are not exceeded.

A natural equilibrium exists with a virgin stock where natural mortality is just replaced by new growth. This is a very much simplified description as environmental factors are going to vary over time, at any one time being more conducive to stock growth and capable of carrying a larger stock than at other times. The equilibrium point may be looked upon as a range within which the virgin stock size will vary.

If the stock were to fall in size as a result of fishing, the growth rate of the stock would tend to increase. This could happen because there is a greater supply of food per fish as the stock decreases,

because the age structure of the fish population changes to one where there is a greater predominance of younger, faster growing fish and because smaller spawning stocks and fewer eggs being fertilised may mean less competition for food and a higher survival rate at a critical stage (Hannesson 1993, p6). The growth of the stock in excess of natural mortality may be referred to as surplus growth. As the stock is fished down, the rate of surplus growth increases until a point is reached where the stock size has decreased to a point at which surplus growth in absolute terms begins to decrease. Thus there is an optimum stock size where surplus growth is at a maximum. If the stock were not fished for a period it would tend to grow again towards its virgin stock size with growth exceeding natural mortality. One can plot the relationship as in Figure 9 below where the simplifying assumption is made that as long as there are some fish of that stock left in the sea, the stock will grow. Many stocks are thought to have a critical minimum stock size below which the stock does not grow. This possibility is ignored as a simplifying assumption.

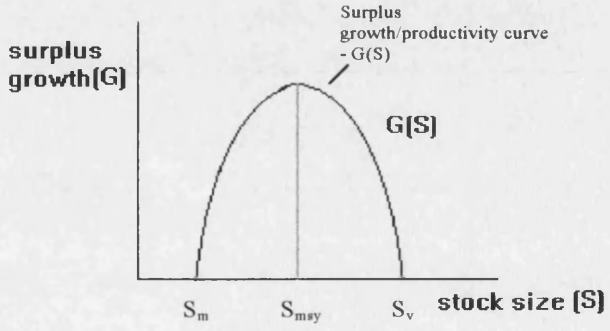

Figure 9: The relationship between size of the stock (S) and surplus growth (G) per unit of time. (source: Hennessen 1993, p6)

If a fishery is going to be viable in the long term, then the quantity of fish caught cannot exceed the surplus growth. This is the case for any point between S_m and S_v and so any point along this line may be considered a sustainable equilibrium. This curve could also be said to represent a sustainable yield from the stock. A sustainable yield may be achieved that is not necessarily the optimum sustainable yield. The maximum surplus growth, which makes possible the maximum sustainable yield, S_{msy}, will be at some stock level between S_m and S_v.

1.2.2 Generation of rent in a fishery

A difficulty with a general model of a fishery is that the biological characteristics of each fish stock can vary very considerably from those of others. Therefore, any generalised model is necessarily going to contain simplifications which do not necessarily fit any particular fish species.

A general biological difference between many fish stocks is the degree to which the stock will spread over a specific geographic area in response to depletion or whether the stock will aggregate, thus being found at the same density but over a smaller geographic area as the stock diminishes. This will influence judgements about the apparent state of a stock judged from the perspective of catch per unit of effort. Some fish stocks, such as hake and cod, tend to remain uniformly spread over a particular geographical area so that, if the stock diminishes in size, the stock becomes less dense and a unit of fishing effort will harvest a proportionately smaller catch. On the other hand, a stock like Namibia's pilchard stock, along with other small pelagic stocks, will tend to maintain the same dense aggregations as the stock diminishes in size so that there tends not be to be a reduction in the catch per unit of effort. These have quite considerable implications for the management of the stocks and the way in which we understand the response of the stocks to fishing.

Consider what may happen in an open access fishery. Each fisher will seek to maximise his or her own profit. If a fisher decides to leave some fish not harvested today in order that they will be available tomorrow, he or she has no guarantee that someone else would not take them in the meantime. In common with the open access use of other common pool resources, the social costs of fishing are not all borne by the fisher and consequently there is a tendency towards over-fishing. However, if a fish stock is going to be harvested sustainably in the long term then the quantity of fish caught cannot exceed the surplus growth.

In Figure 10, the relationship between sustained fishing effort and the sustainable yield is presented for a fish stock where catch per unit of effort is proportional to the size of the fish stock, which tends to be a reasonable approximation of the behaviour of hake. Figure 10a shows the surplus growth curve G (S) and straight lines showing how the catch will be a constant proportion of the stock size for a given level of effort. If one increases the effort from, say, Z1 to Z2, the catch would increase for any given level of stock.

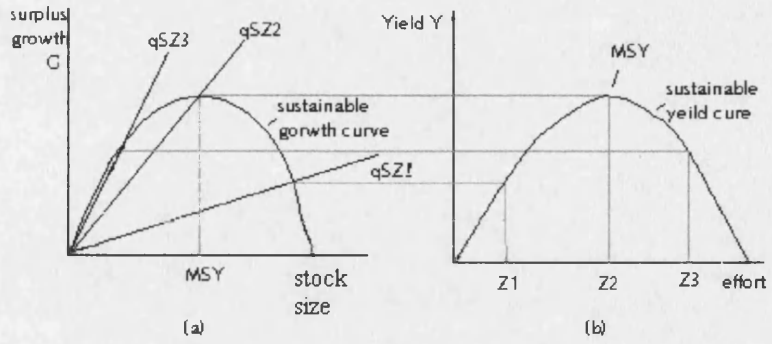

Figure 10: In (a) relationship between surplus growth and stock. The straight lines, qSZ, represent catch at a constant level of effort (Z1, Z2 etc.) for any stock size. In (b) sustainable yield (Y) as a function of effort (Z) derived from the equality between surplus growth (G) and catch (qSZ). (Source: adapted from Hannesson 1993, p24 and L Anderson 1977 , p21)

In this simple model it is assumed that the rate of growth of the catch depends only on the size of the stock at any given level of effort. At each level of yield or catch, one can associate a wide range of levels of effort. However, only one point on each catch function is associated with a sustainable yield. At a particular catch the sustainable yield reaches a maximum, the maximum sustainable yield (MSY) and this is associated with a particular level of effort which, in Figure 10, is at Z2. We can thus produce the sustainable yield curve as shown in Figure 10 (b).

If constant prices are assumed and each point on the sustainable yield curve is multiplied by a constant price, it is possible to produce a sustainable revenue curve with the same general shape as the sustainable yield curve (Figure 11). A constant price for effort is also assumed so that cost increases proportionately to effort. Thus the straight lines denoting effort in Figure 10 become cost curves in Figure 11. The rent associated with a sustainable yield is maximised at the point where the cost line and the total revenue curve are furthest apart. Note that this optimum level of effort (Z_{opt}) is less than needed to take the maximum sustainable yield (Z_{msy}), and considerably lower than the equilibrium associated with an open access level of effort (Z_{eq}), where total cost equals total revenue.

In the case where the catch per unit of effort depends on the size of the stock, the optimum level of effort (Z_{opt}) is lower than that needed to catch the biologically determined MSY (Z_{msy}) and considerably lower than what would be deployed under conditions of open access (Z_{eq}) where total revenue equals total cost and all resource rent tends to be dissipated.

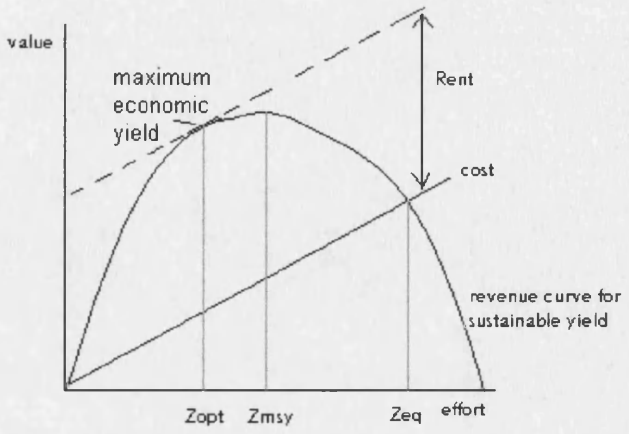

Figure 11: Effort at Zeq in open access, while optimum effort is at Zopt and that which would produce a maximum sustainable yield at Zmsy. (Source: adapted from Hennesson 1993, p24)

A similar exercise may be undertaken in the case when the fish stock tends to aggregate as densely after fishing has occurred as before, a reasonable approximation for the behaviour of pilchard and other pelagic species. In other words, yield per unit of effort is independent of stock size and does not fall as the size of the stock is reduced.

This is represented in Figure 12. The size of the catch is solely dependent on effort. Because the catch is independent of stock size the lines showing the catch taken by given levels of effort are horizontal. The sustainable yield curve that results is shown in the right part of Figure 12. It is a straight line if the catch per unit of effort is always the same. However, it will rise at a decreasing rate up to its maximum if the catch per unit of effort decreases as more effort is applied, such as is shown by the dotted line.

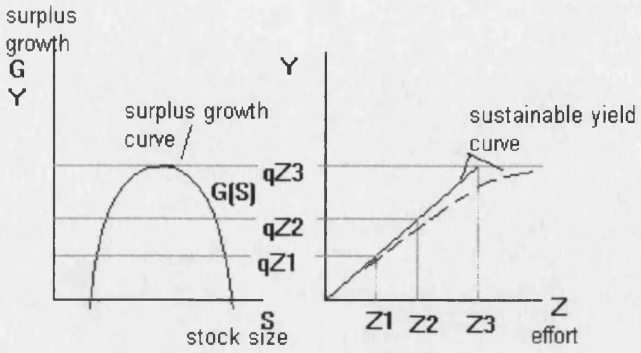

Figure 12: The sustainable yield as a function of effort (Z) when the catch per unit of effort is independent of stock size. The dashed line shows sustainable yield when the cpue decreases as the effort increases. (Source: adapted from Hannesson, 1993 , p24.)

The total revenue and cost curves derived from this in Figure 13 shows that the maximum rent is obtained at the level of effort needed to harvest the MSY.

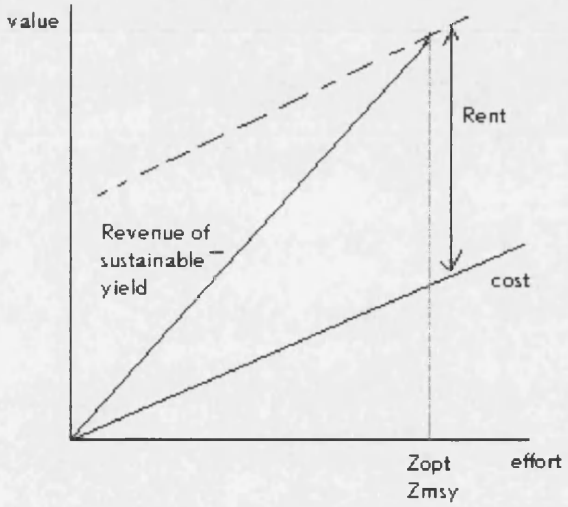

Figure 13: constant catch per unit of effort, Zopt will be the same as Zmsy.

In these circumstances a fisher will always make some profit so that under open access conditions there is nothing that will prevent the fishery from expanding to the point where the stock is wiped out.

These deterministic models of the fishery are based on an assumption that a reliable level of predictability is possible. They in turn may be divided into static models, where no discounting of rents takes place and dynamic models where there is discounting of future rents. Further modelling has attempted to deal with questions of uncertainty in fisheries where it is argued that so many variables in the growth of a fishery are for practical purposes unpredictable due to the dearth of knowledge of them and the complexity of the functioning of the marine environment.

This analysis may be summarised as follows. When a virgin stock is first exploited in an open access fishery, the fishers at first experience high catch rates and high profits. This attracts more fishers to join them and those already in the fishery may commit more or improved gear, vessels or other capital equipment to the fishery. Fishers then tend to intensify their efforts to catch the dwindling stock. If the catch is greater than the surplus growth of the stock, the stock will dwindle until a point is reached when the stock becomes over-fished. Catch rates and profits fall to a point where most of the fishers just break even. If further fishing effort is committed to the fishery, it brings about losses and forces some of the fishers to leave the fishery and a break even point for the fishery as a whole is attained. At this point all the economic rent potentially available in the fishery is being dissipated.

While the concepts of maximum sustainable yield and maximum economic yield may be useful in informing conservation policies and in developing a framework within which to achieve maximum overall economic efficiency, they cannot be taken beyond a general framework for thinking about fisheries management.

A difficulty with these two concepts is that they rest on the simplistic assumption that, for a particular fish stock, there is a level of fishing effort that can be sustained year after year, with surplus growth neatly compensating for overall catch. Most marine stocks, however, live in a complex and variable environment which produces what sometimes seems to be chaotic or random fluctuations in their populations with causes that are often, at best, poorly understood (Gleick 1987). For practical purposes there is little chance, with the current state of scientific knowledge of marine ecosystems, of even knowing whether a maximum economic or biological yield has been achieved because, among other factors, the lack of precision in stock assessment is generally accepted as

potentially being 30-50% out[10]. If, however, these concepts are regarded as broad ranges rather than precise targets they do offer a conceptual framework within which an analysis of a fishery can take place and offer a better basis for decision making than nothing at all.

The above analysis emphasises in general terms the potential rent available in fisheries and the ease with which it can be completely dissipated. Any notion of efficient use of the resource must address the question of what happens to the resource rents.

1.2.3 Rents

The above analysis tells us that if a common pool fishery has commercial potential, is not subject to effective regulation and is competitively exploited by more than an optimal number of appropriators, then there will be inevitable market failure in the sense that the fishery will expand to the point that economic, and usually biological, over-fishing has occurred. Each fishing enterprise, by extracting from limited fish stocks, reduces the harvesting possibilities of other fishing firms, thus imposing production externalities on each other. In marine fisheries these externalities are so pervasive that, in the long term, there is near or complete dissipation of economic rents irrespective of the potential productivity of the fisheries. In other words, there will be competition for the highest possible share of the resource rent until most of it, and possibly all of it, has been wasted by unnecessary production, processing and marketing costs.

The resource rent in a fishery may be defined as the difference between the value of the catch per unit of effort and the cost per unit of effort, with the cost including the income that the enterprise would get in an alternative occupation (Hannesson 1989, p5-6), that is, opportunity cost for the enterprise. This would be maximised at the point described in Figure 11 above as the maximum economic yield and is where the difference between the marginal revenue and marginal cost is greatest.

The dissipation of resource rents becomes clear from the above analysis, but the phenomenon is not confined to open access fisheries. Considerable dissipation of resource rents also takes place in

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[10] Disagreements may be even more extreme. This was well illustrated by a debate between scientists of the MFMR and scientific consultants employed by the Namibian industry to challenge the Ministry's scientists over the size of the hake biomass (see Ch 7, 2.1.1 (3)).

regulated fisheries as will be discussed further below. Stopping unrestricted open access to the resource is an essential, though not a sufficient, condition for solving the problem.

The scale of resource rent loss will vary considerably but can be extraordinarily large as potential rents can be very large. Rents ranging between 11% and 60% of the gross revenues, with a weighted average of 30% were estimated to exist for the Australian fisheries (Campbell and Haynes 1990). The US National Marine Fisheries Service estimated that the gross revenue for the New England groundfish fishery could increase from $US170 million to US $200 million while net revenue, which was being dissipated, could be about US$130 million, that is about 65% of gross revenue for the New England groundfish fishery (FAO 1992, p 159).

In a study of rent dissipation in the Canadian west coast salmon fishery, for which there is restricted access, Dupont illustrates how rent of some $69.436 million could be earned from the total revenues for the salmon fishery of some $164.9m in 1982. The negative rent of $38,695,000 was actually occurring because of inefficient regulation (Dupont 1990).

Various estimates of potential rent for the world's fisheries have been made. The FAO, using the Australian ratio of rent to gross revenues quoted above, estimates that annual resource rents for the world's fisheries would be about US$54 000 million per year. Arnason estimates a more moderate figure of US$25-50 000 million per year (Arnason 1991, p409). If global revenues are about US$70 000 million (FAO 1992, p145), then potential rents are extraordinarily large as a percentage of gross revenue.

In Chapter 5 it will be argued that the right to the benefit of fisheries resources in effect belongs to the State acting on behalf of the people of Namibia. Thus rent from this resource belongs to the people of Namibia and ought to be collected by the state on their behalf. Paying this rent to the state needs to be regarded by a fishing enterprise as payment for access to the resource, for use of part of the natural capital of the country and, therefore, as an accepted part of the cost of fishing. This, however, is seldom the case. In many fisheries where there has been some measure of success in reducing or eliminating over-capacity, much of the resource rent generated has not been collected by the state. Relative to the performance of many other states, Namibia has been quite successful in capturing resource rent (Ch6, 2.2) but much of it is still dissipated.

Namibia earns considerable net revenue from its fisheries. Revenue from quota fees alone for the financial year 1994/5 amounted to US$ 30 million while the running costs of the entire Ministry, including the inspectorate, amounted to US$9.6 million for the same financial year (Namibia 1994a). This sum of US$9.6 million, strictly speaking, is not part of the rent as it is the equivalent of a recovery of costs for services rendered to the industry in managing the resource. There are both capital costs and operating costs covered by development aid not included in these figures, but these do not invalidate the basic picture. In addition to quota fees, revenue includes fuel tax, the research levy, licence fees for vessels and company and income tax generated. Although the Namibian Government is managing to recover a significant portion of the resource rent, generating much needed revenue for purposes of development, there is still considerable resource rent accruing to the industry as abnormal profits or as over-capacity (see Ch.7).

If resource rent is not collected by the state it constitutes a subsidy from the public purse to the recipient of that rent. The nature of this rent as a subsidy should be more clearly recognised and the recipients of the rent should be required to account for its use. They can only be expected to do so if the rent is dispensed for specific purposes. If uncollected resource rent is considered a subsidy to the industry, these subsidies granted in this way to the industry may be justified in terms of the development objectives of increasing employment, Namibianisation of the industry and establishing new industries destined to target export markets. But there is no particular reason why fisheries should necessarily receive those subsidies. Other economic activity may well be more deserving or expenditure on social sectors such as health or education may be more beneficial to society as a whole.

2. Regulation:

The open access nature of large marine fisheries began to change with the advent of extended fisheries jurisdiction in the 1970s (see Ch. 5). Extended jurisdiction, the claiming of rights by coastal states over the 200 nm exclusive economic zones or exclusive fisheries zones, brought about the greatest change in fisheries management since the 'freedom of the oceans' doctrine expounded primarily by Hugo Grotius became commonly accepted in the 17th century.

Coastal state governments, for the first time, were able to claim jurisdiction and thus regulate more than their inshore fisheries. It meant that 90-95% of the world catch was caught in the waters now

under the jurisdiction of a coastal state. The movement towards extended jurisdiction arose out of the depletion, or threatened depletion, of commercially valuable species and the realisation of their value as sources of revenue by coastal states. As over-fishing and the need to address the biological problem of the depletion of fish stocks were the focus of regulation, many regulations developed with little regard for their economic or other social impact.

2.1 Objectives of regulation

The primary objective of regulation is to change the pattern of fishing from that generated by open access towards an optimal utilisation of the resource. This broad objective may be broken down to reflect more specific objectives. Beddington and Rettig identify several reasons for the implementation of fisheries regulations (Beddington and Rettig 1984). The most commonly cited reason for selecting regulatory instruments is its effect on conservation (ibid.). This may relate to the rebuilding of a heavily fished stock or the management of a healthy stock to prevent it from being excessively fished.

The degree to which economic optimality is achieved, is another objective used for selecting methods of regulating a fishery. Movement towards the theoretical maximum economic yield may determine the selection of regulations aimed at preventing the tendency in the unregulated fishery towards overcapitalisation and dissipation of potential economic rents.

Beddington and Rettig also cite social factors, particularly those of equity and employment, as reasons for deciding on a regulatory framework (ibid).

The feasibility of effectively enforcing a regulation, taking into account cost and administrative capacity, needs to be considered. If the costs are high, either because of the amount of data needed or monitoring required, or because of the degree of legitimacy with which the regulation is regarded, it may not be feasible to implement the regulation.

2.2 Methods of regulation:

Over the years a number of regulatory techniques have come into common usage. These may be divided into measures that in some way limit the input into the fishery, and those that restrict output and taxes.

2.2.1 Direct input measures

Direct input measures are those that limit some component of fishing effort. Fishing effort is a function of the size and type of boat, its power, the type of gear used, the size of the crew, the fishing skills of the captain and crew and the time and location during which fishing takes place (Anderson 1977, p194). Often in practice some proxy for fishing effort is used, such as gross registered tonnage of the vessels or horse power of the engine.

Licensing a specific number of vessels with just sufficient fishing capacity to harvest the target species is a method used for limiting effort. However, in practice, if the number of vessels in the fishery is limited by licence control without additional regulations, there will be a tendency to increase harvesting capacity through technological improvements (McConnell and Norton 1978, p196). If gross registered tonnage is restricted, then the vessel owner may increase fishing effort by, for example, increasing the horse power of the main engine or using more sophisticated electronic fish-finding equipment. The result is movement back towards over-capacity and dissipation of any rents present in the fishery. This is sometimes referred to as 'capital stuffing'. The process of the enterprise increasing effective effort above a level needed to catch a quota, is restricted only in as much as it is required to use substitute inputs to achieve that objective. Resource rent may be absorbed as a result and may result in a further regulation.

Although there is likely to be some increase in fishing effort after an initial reduction of effort following licensing, it is likely to be at greater cost than would be the case if capacity was increased through the use of more vessels and there would be a tendency not to return to the original effort level (Crutchfield 1979, p746). The new equilibrium will thus be achieved at a lower level of effort.

However, where considerable over-capacity has already developed, it is often politically difficult to reduce the fleet to an optimal size and the regulating authority then allows more than the optimal number of vessels to remain as participants in the fishery.

In the Namibian hake fishery vessel quotas were introduced in 1994. Quotas were granted to specific vessels. As the quota granted to a particular company had to be caught by specific vessels, the impact on the catch for 1994 was that it fell, as a result of the need to commit more vessels to the fishery, because environmental perturbation had dispersed the stock or because there had been a

higher mortality rate. As there was no corresponding increase in the number of vessels in the fishery, the catch fell in proportion to the availability of the stock. It would appear that, from the perspective of conservation of the stock, the impact was positive.

The tight control over capacity of the fleet, however, was not reflected in the growth of processing capacity on land. The government wished to promote processing on land because of the ability to employ a larger number of people. Thus, incentives were created to increase on-land processing capacity and companies were informed that they would be more favourably regarded in the allocation of quota if they invested in on-shore processing facilities thus creating more jobs (MFMR 1993b). Processing plant for the white fish industry is said now to be more than double the capacity needed to process the available catch (Clark 1996). The result is that the industry is placing increased pressure on government to reduce the quota levy, in an effort to finance the excess capacity.

A variation on the licensing limitation approach is to attempt to limit effort by limiting the number of days at sea such as the programme currently in use in the European Union. This will have the same effect as limiting the number of vessels in the fishery but with one important exception. The same stock of capital in the form of vessels will be retained but will be used less efficiently. Rent and possibly other forms of subsidy are absorbed in the process.

Licence limitation may also result in the dissipation of resource rents if the regulator allows a sub-optimal mix of heterogeneous vessels to participate in the fishery (Dupont 1990, p27). If quota is allocated to vessel types, relatively inefficient vessels may continue to participate in the fishery thus dissipating resource rent.

If restrictions on the number of vessels through licensing takes place at an early stage in the development of a fishery before capacity becomes excessive, it will be more successful as it will avoid having to get rid of excess capacity at a later stage.

Gear restrictions limit the usage of particular fishing equipment by either type or amount which the fisher would otherwise be likely to use. They restrict elements of what constitutes fishing effort. Anderson contends that this means proscribing "certain cost-effective ways of operating" (Anderson 1977, p204) and he characterises such regulation as "regulation by inefficiency" (ibid.). By increasing the costs of fishing, the restriction succeeds in reducing effort, reducing the catch and

improving the state of the stock but does nothing to promote greater economic efficiency. With time other technological improvements are made which again bring down the cost of effort and effort then expands. The regulating authority then imposes new gear restrictions in order to reduce the level of effort and the process is repeated.

While Anderson's characterisation of gear restrictions is true in many instances, it may also happen that restrictions can be imposed on gear which may otherwise be used by a fisher who does not bear the full social cost of using that gear. An example is the banning of nets in shrimp fisheries in which excluders are not fitted. The net without the excluder will catch up to 90% "trash" fish, often juveniles of species which may be commercially valuable when they have grown. These are generally dumped. The cost of damage done to the ecosystem is not borne by the fisher. In instances such as this, Anderson's characterisation of gear restrictions is appropriate only if endogenous costs are considered, but are inappropriate if the full costs are taken into account.

Regulating the size of fish caught through restricting mesh size is an example of a regulation offering both economic and biological advantage. Imposing a larger mesh size allows the smaller individuals to escape and concentrates the harvest on larger size individuals (Beverton and Holt 1957) allowing growth in biomass in subsequent years. Initially catch rates fall but the benefits of increased catches at the larger size of fish become apparent over a period of anything between several months and several years, depending on the biological characteristics of the species being caught (Beddington and Rettig 1984, p12).

Regulating by mesh size is more problematic in multi-species trawl fisheries more typical of tropical waters. A single mesh size would need to be selected to catch several different species which are likely to have a whole range of optimal mesh sizes associated with them (ibid., p13). The characteristics of Namibia's fisheries are more those of temperate waters fisheries because of the presence of the cold Benguela Current (Ch. 2). A characteristic of such fisheries is that large shoals of a single species tend to occur with a low level of by-catch.

2.2.2 Indirect Input measures

Indirect input restrictions limiting the amount of fishing effort directed at a particular species have also been employed in the form of closed seasons and closed areas. Two distinct types of closed

season exist (FAO, p11). The first is when particular periods of the year are closed to fishing for a specific species so as to protect the stock during critical stages of the life cycle, such as when the shoals are dominated by juvenile fish. The second type of closed season occurs when access to the fishery remains open, but the catch is limited by closing the season when the catch rate declines to a pre-determined point. This method relies heavily on a strong relationship existing between catch per unit of effort and the size of the biomass and cannot work from a biological perspective if this relationship is weak. The method, for example, would be inappropriate for pilchard, which continue to aggregate densely as population decreases.

Both these methods can have some biological advantage but both increase costs of effort as the limit on the duration of the use of boats and gear lowers the catch per unit of effort used (Anderson 1977, p 201). The second case can produce absurd situations such as the annual "derby" in the Canadian halibut fishery where a large number of vessels were eventually deployed for only a couple of days in the year before the season was again closed (Ch4, 3[11]).

Closed areas have much the same effect as closed seasons of the first type. They may raise costs to the individual fisher if the closure of one area means that the fisher must deploy more effort per unit of catch than might have been deployed in the closed area. Usually such restrictions are introduced for conservation reasons such as protecting a spawning grounds. Again this imposes what may appear to the fisher to be greater inefficiency but in many instances the effect of the regulation is to make the cost endogenous to the fisher instead of it being a negative externality to be borne by society.

2.2.3 Regulation of Output:

In recent years the most popular method of regulating a fishery has been by using catch limits usually referred to as the total allowable catch (TAC). The initial use of TACs was in open access fisheries where no limit was placed on effort but where fishing for the species was banned once the TAC had been reached. As mentioned above, this proved to be economically wasteful and the practice developed of dividing the TAC into quotas assigned to individuals or companies.

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[11] References to other parts of this text will refer to Chapter followed by section number.

The TAC and quota system has the advantages of allowing the quota holder the opportunity to use the most efficient methods to catch the quota and theoretically reduces the problem of over-capacity. Again the benefit of this approach is greatest when the quota system is adopted earlier on in the development of the fishery before over-capacity has developed. This regulatory system has not entirely eliminated the problem as fishers may see greater economic advantage in harvesting their quota before other quota holders can do so and so invest in more capacity than they need to harvest the stock during the season. This may happen particularly when there is doubt about the size of the biomass in a particular season; if there is the possibility that the season will be brought to a sudden, premature end then it could produce a race for the fish and a capacity greater than that needed if the season were to run is full length. This has prompted the development of vessel quotas in some fisheries, such as the Namibian hake fishery.

2.2.4 Comments on the use of a TAC and quota system.

The TAC and quota system has positive attributes but also its own set of negative externalities. It should be noted that these comments apply whether the quotas are transferable or not.

Any individual quota system encourages the phenomenon of dumping useable catch for economic advantage. This may take place for a number of reasons. Firstly, there is the practice of *high-grading* the catch which happens in order to obtain the greatest net value from a quota. A fisher will wish to fill the quota with fish of the quota species that fetch the highest price per tonne. This may mean dumping the smaller fish of the same species when larger fish have been found if the larger fish received a higher price. For example, the price of headed and gutted Cape hake on the Spanish market in February 1994 was US$1.10/kg for fish smaller than 250 gm per piece while fish larger than 1300gm/piece fetched US$2.45/kg, that is, over twice the price (Globefish 1994). This would provide a strong incentive to high grade. A study in 1985 of the Bay of Biscay hake fishery showed that fish dumped were 130% of the catch landed (Commission 1991b, p19).

Price dumping may occur as a result of prices dropping below a point where it is economically worth while landing the fish. This is not a problem which is likely at present to occur in Namibia, because there is not an auction system operating which would allow prices to the fluctuate and bring about a situation where a skipper may decide to dump the catch instead of bringing it to shore and have it counted against the quota .

A quota system may also result in the dumping of *bycatch*. This is a particularly significant problem in European Union waters (ibid.). The MFMR have approached the problem by setting a bycatch levy which is aimed at being low enough to make it worth while landing the catch but high enough to discourage specifically targeting the species for which the fisher has no quota and claiming it as bycatch.

A considerable problem, referred to as *data fouling*, arises out of these practices. If scientists are relying on catch data received from the industry, it is likely be to be very inaccurate. The recorded catch is likely to be considerably lower than the actual catch. For this reason some fisheries have avoided quota systems as the scientific value of accurate data is seen as more important than developing an additional edge to the efficiency of the system.

Quota busting, taking more fish than the allowed quota, and poaching, taking fish without a quota, could also be serious problems for a quota fishery. This problem tends to be greater where there are a large number of small boats operating and where there are many landing sites and channels through which to dispose of the fish. Namibia has a relatively small number of larger vessels (Ch. 7, 4.1) and has only two ports at which fish can be landed. The fishery is thus relatively easy to police as the opportunities for cheating are relatively small.

2.2.5 Taxes

Pigovian taxes (Pigou 1932) appear to provide a theoretically sound solution. Inefficiency in laissez-faire ocean fisheries exhibits itself as excessive fishing effort. Theoretically, a high enough tax rate will completely choke off excessive fishing effort. Although this has been advocated as a means of controlling fishing effort (Brown 1974) there do not appear to have been any attempts to use taxes as the sole basis of regulating a fishery but they have been used together with other instruments in a number of fisheries, as is the case in Namibia.

The difficulty is that the fisheries manager must have full knowledge of the details of the resource growth function as well as the harvesting and cost functions of all the firms participating in the fishery and must solve the profit maximisation problem for every firm to estimate its particular effort-tax response function. Although this is not empirically practicable it might be possible to

auction part of the quota and use the auction prices as an index for adjusting the levy paid on the remainder of the quota.

Taxes can be used to change the level of effort used in a fishery by directly reducing the profitability of fishing. Taxes have the distinct potential advantage of producing economically efficient reductions in effort. The tax has the effect of raising either the cost of inputs in the fishery by taxing effort or by reducing the price received by the producer if the catch is taxed.

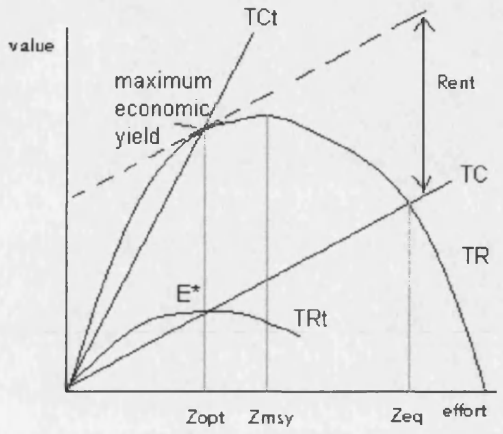

Figure 14: Effect of tax on effort and revenue. By taxing inputs the total cost curve TC will move to TCt. By taxing revenue, the net revenue will be reduced to TRt. Source: adapted from Anderson, 1977, pp 220 and 223.

In both cases effort will be reduced in the first instance by raising costs in an efficient way and, in the second, by lowering revenue. Figure 14 illustrates the addition of the tax, *t*, to the cost of effort, effectively raising costs from TC to TC_t. At this point the slope of the TR is the same as the slope TC1, the point at which the rent is maximised. The actual costs of producing effort have not changed as the fisher has no incentive to change the combination of factors making up the effort directed at the fish stock.

Equally, the tax may be placed on the catch which has the effect also illustrated in Figure 14. Total revenue is reduced by the amount of the tax to give a new total revenue curve for the fisher of TR_t. The new equilibrium will be reached at the point where the tax adjusted revenue curve intersects the total cost curve at E*.

While taxation has the potential for creating greater efficiency in the fishery by creaming off the resource rent and not permitting it to be dissipated, the difficulty is determining the optimum level at which to set the tax. Political difficulties often hinder the imposition of a tax because powerful lobbies are financed from rent collected as abnormal profit by fishing companies.

Numerous difficulties are associated with regulation. Often regulations may be imposed which may bring the desired biological result but at the cost of inefficiency which in turn means waste of resource rent. Some methods of regulation, however, shift the cost of negative externalities back to the fisher or are not otherwise economically wasteful. Such power by the state over the fortunes of fishing companies raises a bigger question: what role should the state have in the management of large marine fisheries, particularly because of the risk of rent-seeking and the potential growth of corrupt practice.

3. The role of the state in fisheries management

Although the focus of this thesis is the management of Namibia's marine fisheries, insights from the literature on the role of the state need to be considered because of the centrality of the role the state takes in fisheries management, not least in Namibia. The position taken in this thesis is that the state has a pivotal role to play in the successful management of Namibia's fisheries if objectives of Government policy are to be achieved.

3.1 The state

The state may be defined as a recognisable separate set of institutions, so differentiated from the rest of its society as to create an identifiably distinct public sphere; the state is the supreme power within its territory and exercises a monopoly on the legitimate use of violence to enforce its laws, funding its activities through the extraction of revenues from its subject population. (Dunleavy and O'Leary 1987, p2)

Mann (1984) takes the argument further and stresses that the state is necessarily a territorial body, that it could not operate if it were not, and that its territorial nature is part of its power base.

States have in common the claim to a monopoly of legitimate violence and Susan Strange points out that they acknowledge reciprocally each other's right to that claim (Strange 1988, p50). When one

state challenges another's right to that claim the security structure is threatened. Trans-border activity, a characteristic of many large marine fisheries, is particularly vulnerable.

3.2 Theories of the state

The Platonic approach to theorising about the state, saw the state as idealistic, competent and well-informed, reigning above interest conflicts and promoting the common good. This view is evident in the writings of James Meade, Jan Tinbergen and A.C. Pigou. Paul Streeten (Streeten 1993, p1289) characterises this as an "old romantic theory" in which the government can do no wrong.

An opposite approach, associated with the public choice school, argues that the state essentially distorts economic transactions, resulting in an inefficient and inequitable allocation of resources, greater impoverishment and reduced freedom. This view argues that politicians and bureaucrats always pursue only their self-interest. State intervention in the market place is bound to make matters worse, representing in the words of David Colander, "invisible feet stomping on invisible hands" (Colander 1985). The state is seen as predatory, using its power to get access to the property of its citizens.

A third group, referred to as the social contract theorists, associated with the names of Hobbes, Locke and Rousseau through to Mancur Olson and John Rawls, argue that citizens surrender some of their freedom in exchange for the provision of collective goods, protection against aggression, benefits from externalities and other services of the state. They argued that, on balance, by avoiding ills associated with the lack of regulation, such as the tragedy of the commons scenario, prisoner's dilemmas and free rider outcomes, citizens gain more benefits and greater freedom than they sacrifice by relinquishing some of their freedom.

The public choice school would not have gained such credibility, however, had there been no substance to their claims about the nature and functioning of the state. Yet real states are seldom that extreme. While self-seeking clearly occurs, such as rent-seeking behaviour discussed further below, this is not the only motivation to be found in the public sector. Streeten makes the point that "on occasion, governments, like charitable foundations, universities or voluntary associations, do act disinterestedly and in the public interest, particularly, but not only, if there are pressure groups behind them" (Streeten 1993, p1290). It is not valid to assume that a failing market is a better option

than state intervention. The real challenge is not to minimise the role of the state but to design institutions that appeal to private initiative and enterprise, while taking account of social objectives and public accountability. The state has a *prima facie* responsibility to ensure that the collective interest is addressed if for no other reason that it is the only all-encompassing association able to look after the general interest providing, of course, that it is suitably motivated and structured.

In today's world, when one considers the large marine fisheries of any particular territory, a state would need to be invented if it did not already exist, if the fishery was to be successfully managed.

3.3 Some relevant functions of the state

3.3.1 The state's role in contract compliance

Within a society contracts and agreements of various sorts are constantly being entered into. In the absence of a guarantee that the trust implied in a contract will be honoured, there would be a complete breakdown in society. Thus the need for what Hobbes (Tuck 1996) referred to as a 'Leviathan' to ensure that they do.

It may be argued that one way to ensure that contracts are honoured is for those who are affected to act collectively. Appropriators in common pool resources (CPRs) have done so successfully over centuries (Ostrom 1990) and it is important to glean the lessons of institutional design from them. These instances, however, tend to relate to relatively small, well defined CPRs. But in many other cases, individuals acting collectively find that they are unable to ensure compliance with the rules that they have established. This is the case with large marine fisheries where peer monitoring and enforcement is problematic because of the spatial scale involved. This necessitates the existence of an organisation which can create rules of contract compliance that hold for all contracts entered into within the territory where the law is imposed and enforce their implementation. It must have the power to hear cases against those accused of breaking the law and impose sanctions if the accused are found to have broken the law. That institution, with sovereign power over the population of a defined territory, is the state. For these reasons regulation of large marine fisheries is most effectively undertaken with state involvement.

It should also be noted that co-operation with appropriators in creating the rules and giving effect to them considerably enhances their impact. An example is worth noting from the Namibian fisheries

sector. At a time in 1990 when the Namibian state did not have the infrastructural capacity to police its newly acquired EEZ, co-operation with legally operating appropriators brought an end to illegal fishing in Namibian waters by a 40 strong Spanish fleet of large freezer trawlers. The Namibian based fishing fleet provided precise intelligence to the Namibian authorities on the whereabouts of the Spanish vessels. A helicopter was hired from the private sector as the Government did not own one[12]. This was done with initial private sector financing, later refunded, as the Ministry was not geared at the time to finance rapidly and secretly the operation from within its budget.

Five offending vessels were captured by armed soldiers as a result of this operation. The skippers were found guilty of illegal fishing, vessels, gear and catch confiscated and the skippers fined, a punishment deemed by the court to be commensurate with the damage inflicted.

The state would not have been able to enforce the law in this instance without a high level of support from the fishing companies; equally, the local fishing industry had no authority to prevent large scale theft of valuable fish stocks taking place before their very eyes and were thus unable to end illegal fishing without state intervention.

3.3.2 Infrastructure and service provision

A degree of infrastructural provision needs to be provided by the state. Much of this may be a facilitating infrastructure such as the provision of a common set of weights and measures or a common currency, examples of 'public goods'. The need for a public good often exists because of 'market failure'. However, it should be immediately noted that market failure is not automatically an argument for state intervention, just as state failure is not automatically an argument for private markets. In each instance the logic of the alternative needs to be established and possible remedies for the failure considered.

If one considers the provision of scientific information in a large marine fisheries, it could be argued that the interest in its provision are so diverse that it is best supplied by the state.

The resource is publicly owned and so the wider public has an interest in the optimal utilisation and long term health of the resource. An independent service, answerable to the widest possible array of

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[12] See Chapter 6, section 3.

interest groups, is needed in order to meet the needs of industry as well as 'present and future generations'. This function is best fulfilled by the state.

3.3.3 The role of the state in development

The role of the state in development has been a much debated and controversial topic. This discussion is not an attempt to re-assert post war positions on large scale state intervention (Rosenstein-Rodan 1943) which, it was argued, was capable of releasing developing countries from the poverty trap (Nelson, 1943) and of achieving economic success. Neither does it accept that the state is necessarily predatory in nature, extracting surplus from the economy and utilising it unproductively (Lal 1984). It does, however, accept in general the common sense position of social contract theorists applied in the development context. Considerable empirical evidence now exists of the active role of the state in stimulating and guiding economic development in the east Asian region (Amsden 1990; Haggard 1991; Wade 1992).

Mrinal Datta-Chaudhuri's contribution likewise reflects the more recent emphasis on the nature of the state's intervention in the economy (Datta-Chaudhuri 1990). Drawing a sharp contrast between past Korean and Indian state intervention, he argues that the state can play an important role in supporting and promoting the right kind of market and non-market institutions which provide rewards and penalties around economic activity. He asserts that the dichotomy between market and government is a false one, as both market and state have important functions in providing these rewards and penalties, a consideration which has resonance in the fisheries sector.

This thesis asserts that the Namibian state must retain an active role in fisheries management (1) because of the characteristics of the resource, (2) because of the constitutionally based commitment to improve distribution of the benefit from the resource and as custodian of the interests of future generations and (3) because of the state's role in the global institutional arrangements for the management of a global common pool resource.

3.4 The state and fisheries management

3.4.1 The nature of the resource

Most fish caught in the oceans are caught above the continental shelf (Hannesson 1991) most of which, prior to the extension of jurisdiction, projected into the high seas, where the doctrine of the 'freedom of the high seas' prevailed. Thus, after the extension of jurisdiction, most of marine capture fisheries came under the jurisdiction of coastal states. This represented a dramatic change in the legal provisions relating to fisheries and created new possibilities for the management of fish stocks. The common pool nature of the resource, the characteristics of which were discussed in the previous chapter, remains a consideration.

3.4.2 Distribution of benefit

The economic and social desirability of an improvement in wealth distribution in a society where that distribution is extremely unequal has been well established in the literature. A concern to reduce poverty or to improve income distribution and, relating to this, the inter- generational aspect of equity, have been presented as arguments for state intervention (Stern 1991, p251). The extreme nature of the poor distribution of wealth in Namibia from a development perspective calls for state intervention to ensure improvements in nutrition education and health. The inter-generational extension of this responsibility requires that improvements in the welfare of the current generation should be attained in such a way that the welfare of future generations does not decrease (Pearce et al 1993, p49). The state is the best available mechanism for achieving these objectives.

3.4.3 Global environmental problems and the Law of the Sea

The nation state is the predominant form of the state in today's world. In many ways, it may be argued, that this is an efficient division of the world (Johnston 1989, p159). In other ways it is inefficient because many national boundaries cut across systems that have a far wider spread, as is very often the case with large marine ecosystems. The territorial jurisdiction of the state, in such instances, often does not match the unit which needs to be managed as a single entity.

Environmental systems have global interactions so that no part of the earth is independent of all others. Environmental systems or sub-systems are not constrained by 'artificial' political boundaries

(ibid.). The Benguela ecosystem is a large marine ecosystem which extends into Angolan and South African waters and is periodically profoundly influenced by the long-term cyclical global phenomenon, the El Niño Southern Oscillation (ENSO). Finding solutions to these types of environmental problems requires collective action by states. Chapter Five will establish how the Law of the Sea Convention represents a global, negotiated arrangement aimed at establishing a framework within which states take action to resolve, among other things, the problems associated with open access exploitation of common pool fisheries. The LOSC in itself is not sufficient as a solution, but contributes a framework within which states are nested, establishing state property rights over fisheries resources that were previously subject to open access exploitation without property rights defined.

In the late 1960s the concept of 'the common heritage of mankind' evolved and the early 1970s witnessed the ferment surrounding the New International Economic Order (NIEO). It was in this international climate that the third United Nations Conference on the Law of the Sea got underway in 1972. The impact on fishing was a shift whereby coastal states gained jurisdiction over fishing grounds adjacent to their coasts, empowering the state to set limits within them and to police their EEZs. States collectively sought a solution to this global phenomenon of over-fishing and other non-fishing ocean problems by agreeing to the United Nations Convention on the Law of the Sea (1982) and other associated agreements. This is discussed further in Chapter 5.

The state specifically is recognised in international law as a responsible party to a negotiated measure contributing to the solving of the global fisheries problem. The state was granted rights and carries responsibilities for which it is answerable, *inter alia*, at the Hamburg based Law of the Sea Tribunal (UN-LOSC 1982, Annex VI). Although it is to some extent open to the state to decide on what to do with the rights it has gained and how it will fulfil its responsibilities, it would, at the very least, have to make these decisions and would remain answerable to the community of states with which it has made these agreements. It would need to deliver on its responsibilities, whatever the specific measures it establishes, be they in the private or public domain.

The Law of the Sea Convention codified a partial 'enclosure' of the oceans, establishing property rights for coastal states to manage and utilise, inter alia, the living marine resources falling within the territorial sea and exclusive economic zone. Legally the right to exploit the fishery rests with the state. The problem remains, however, that fish stocks found in large marine fisheries cannot be

fenced in and very often cross borders into the waters of an adjacent state. This creates problems over the actual ownership of a fish stock and gives emphasis to the principle that title to a fish is only gained when the fish is caught.

3.5 Regulation, the state and the market

A strong case can clearly be made for regulation of large marine fisheries by the state. This, however, does not diminish the importance of recognising the pitfalls involved in state regulation. These may involve the avoidance of implementation of regulations in order to reduce costs or make additional gains or they may involve access, in the first instance, to quota in a quota regulated fishery. Of particular concern are various types of rent-seeking behaviour.

In the Namibian fisheries particular attention in this regard should be given to the allocation of rights to fish and the quotas which arise out of those rights, as these could potentially give rise to rent-seeking behaviour. The literature on the management of marine fisheries, however, tends to ignore the insights gained from this debate.

Although the relevant theory was developed earlier by Gordon Tullock (1967), the term 'rent-seeking' was introduced by Anne Krueger (1974). Jagdish Bhagwati (1982) broadened the analysis to include other types of "directly unproductive, profit-seeking activities" of which Krueger's rent-seeking activities are a subset. Bhagwati described the essential characteristic of this border set of activities as being that they "represent ways of making a profit (i e, income) by undertaking activities which are directly unproductive" (Bhagwati 1982, p989). Both authors point out that rent-seeking may be perfectly legal, such as lobbying, or it may be illegal, taking forms such as bribery.

A cautionary note is warranted. The public choice school, or state minimalists, could easily leave the impression that rent-seeking almost exclusively results from public involvement (Krueger,1974). Rent-seeking is no less common in the private sector. Adam Smith recognised this when he referred to businessmen's "conspiracy against the public" and "contrivance to raise prices" (cited by Streeten 1993, p1285). This becomes evident in the empirical data relating to the Namibian fisheries discussed in Chapters 7 and 8.

Krueger's 1974 article tackles rents arising from quantitative restrictions in international trade and the way in which such quantitative restrictions are associated with a rent, in the pursuit of which

resources are used. She argues that the cost of rent-seeking may rise to equal the value of the rent itself. Stern cautions that this argument is based on the assumption that the market for rents is perfect and that this is often far from being the case (Stern 1991, p252). This analysis may be applied to the fishery if quantitative restrictions, or quotas, are introduced as they were in Namibia. The cost of rent-seeking could rise to a point where remaining uncollected resource rent is absorbed. The more valuable the rent associated with the quota, the greater the effort will be to secure that quota and it could rise to the point where the potential rent has been spent on trying to secure that rent. This may take the form of attempting to convince the MFMR and its Minister, for example, that a particular company is most deserving of a quota or it could potentially take the form of bribery, as considerable discretion lies in the hands of the Minister and, by delegation, senior officials in the Ministry, as will become evident in Chapter 6.

Rent-seeking could potentially also occur as a result of trying to neutralise restrictions on catch, for example, by using small mesh cod-end liners in the nets which would enable the capture of smaller fish than would otherwise be the case. The potential also exists for minimising the catch that is counted against quota, thus raising extra profit. Numerous other methods of evading restrictive regulations that would result in extra profit could be cited.

These activities would require the co-operation of the fisheries inspectorate. Resources may be utilised to induce such co-operation. However, in practice, no evidence that this is a serious problem has yet come to light and there are reasons why such forms of rent-seeking are not a particular problem at present in the Namibian fishery. (1) The inspectorate was being trained by well paid foreign consultants who would not be particularly susceptible to bribery. Outsiders being closely involved in the running of the inspectorate would tend to have an inhibiting effect on the use of bribes. (2) Many of the onboard observers employed on the fishing vessels at sea were former fighters in the People's Liberation Army of Namibia (PLAN). In general, there appears to be an attitude that they are there to protect a national resource which they had risked their lives to secure in the conflict with South Africa, and that there is a carry over of commitment to their present jobs in fisheries. (3) Records are kept of catch by the on-board observers. There is a separate count of the catch by shore-based fisheries inspectors which takes place when the fish are landed.

This does not mean that no corruption exists or that it not could occur in the Namibian fisheries. As the issue is not a particular focus of this thesis and as there was no *prima facie* evidence that it is a

significant problem, the considerable effort and time that would be required to pursue this question further was not warranted. The point remains, however, that avoiding corruption or, for that matter, other forms of rent-seeking, should not depend on the integrity of officials. Mechanisms need to be established that would minimise the opportunity for rent-seeking behaviour.

Krueger's more recent work (Krueger, 1990) reflects a move towards defining an appropriate role for the state rather than the emphasis on simply arguing a minimalist role for the state. She suggests that when state intervention in the economy is considered, it needs to be recognised that such intervention is not costless; that policies and programmes once in place tend to have a life of their own; that mechanisms which provide least scope for rent-seeking be chosen (e.g. tariffs rather than import licences); that institutional arrangements be chosen that will force trade-offs to be faced in the administration and execution of policy; and that the more transparent the policies are, the smaller are the opportunities for interest groups to take advantage of them. Decisions about the manner and extent to which the state becomes or remains involved in the fisheries sector must take account of these issues.

4. Conclusion

This chapter has attempted to identify the theoretical basis of the problem. Large marine fisheries are a common pool resource which, left unregulated, would tend towards being over-exploited. Associated with this over-exploitation is the dissipation of considerable resource rent which belongs to the people as a whole.

Various regulatory tools have been employed in fisheries but, in many instances, with poor results. This has lead to a questioning of the role of the state in fisheries management, spearheaded by public choice theorists and the advocacy of market dependent systems of access to the resource. It will be argued in the next chapter that, even where this approach has been most fully adopted, the state has retained a comprehensive role in the management of the resource.

The chapter argues that the characteristics of the resource, the constitutionally based commitment to improve distribution of benefit from the resource and the state's role in institutional arrangements for the global governance of fisheries resources are compelling reasons why the state must retain a pivotal role in the management of fisheries.

There is, however, a wealth of wisdom to be gleaned from the fisheries management debate, explored in Chapter 4, that is relevant to the management of the Namibian fisheries sector.

Chapter Four

ALTERNATIVE MANAGEMENT SYSTEMS

The previous chapter established the importance of Namibian state involvement in resolving the dual problems of sustainable optimal utilisation of marine fisheries resources and distribution of benefit from fisheries identified in Chapter 1. The chapter demonstrated that while there are a whole range of sustainable equilibria in the exploitation of fisheries resources, the challenge is to manage the fisheries at an optimum sustainable level, generating the highest level of resources rents in the long run. The state, by whatever method, directly or indirectly, must take responsibility for ensuring this and that the benefits of these rents accrue to Namibians, to whom the resource belongs.

Regulation by the state has been the established approach to tackling these problems but has been found wanting. It is often stated as fact in the fisheries management literature that regulation has "failed" (Keen 1983). This view is too undiscriminating. Some regulatory instruments impose inefficiencies on the industry, while others succeed in shifting the costs of negative externalities appropriately to the fisher. In addition, state imposed restrictions, and particularly quantitative restrictions, are associated with compliance evasion and rent seeking activities.

The search has thus been on to establish alternative approaches in order to improve on the performance which has been attained through state regulation of fisheries. The challenge for Namibia, as it ought to be for many other countries, is also to arrive at a solution which can accommodate the distributional problem the Namibian Government faces.

This chapter reviews four approaches to resolving the problem of negative externalities which occur in a fisheries under open access. They are often presented as alternatives to traditional government regulation but are not necessarily mutually exclusive. All see an essential ingredient of the solution as resting on a movement away from the open access nature of fisheries and the establishment of property rights to the resource that restrict access. Where there is considerable debate is over the nature of the rights that will most efficiently meet the objectives of reducing excess fishing effort in

an economically optimal manner without producing a negative impact on distribution of benefit from the resource.

The first approach proposes the option of 'sole ownership' of the fishery in an attempt to address the problems of negative externalities. As the costs of exploitation of the resource are only borne by the sole owner, it resolves the problem of a difference between the private costs and social costs of appropriating the resource. Theoretically it leads to biologically optimal harvesting of the resource and offers incentives to do so in an economically efficient manner. It ignores the potential negative impact of a monopoly and the political and social problems arising from implementation. It does not offer directly the prospect of a solution to the problems of Namibia's fisheries; rather its value lies in the insights it offers as any solution must ultimately emulate some aspects of the sole owner paradigm.

A second approach is to argue that property rights may be vested in the community which appropriates the resource and that this is the preferable approach because of the common pool characteristics of the resource. This co-operative approach arises out of the study of many common pool resources which have been successfully managed in this way for extended periods of time, which highlights short-comings of the thesis that degradation of a common pool resource is necessarily inevitable. However, the examples cited in the literature are of relatively small, clearly defined CPRs, and Eleanor Ostrom, whose name is prominently associated with this literature, has herself acknowledged that the

> "Problems of controlling ocean fisheries ....are several orders of difficulty greater than localised common-pool problems such as managing grazing lands, irrigation projects, inshore fisheries, and the like" (Ostrom 1990, p303).

While such arrangements may not be practical for large offshore fisheries, design principles for managing larger fisheries can be learned from them. The complexity of large marine fisheries and their multi-species nature, calls for a complex set of institutions by which the fisheries will be managed. If the locality and biological characteristics of a particular fish stock, such as Namibia's rock lobster stock, indicate a suitability for management in this manner, some form of co-operative management could be instituted for the fishery as a nested arrangement in the overall management of the fisheries within the ecosystem.

The third approach is an attempt to establish private property rights to percentage shares of the total catch. The most prominent of these approaches is the use of what has become known as individual transferable quotas (ITQs). The most common form of ITQs is the permanent right to a tradable percentage of the total allowable catch for a particular species. Proponents of this approach make extensive claims of biological and economic optimality, the development of a conservation ethic, and ultimately of self-management of the resource. Many of the claims are not borne out by the empirical evidence now available.

It will be argued below that this system could be used to allocate quota efficiently, provided that the problem of distribution is overcome by the state capturing the resource rent potentially available as a first step in promoting better distribution policies. More than that should not be expected from the system but it could have a place in the overall management arrangements for certain species.

Finally, the co-management option is discussed. The essence of this approach is a shift away from an adversarial system of 'us and them' in fisheries management to one of co-operation between industry and government which seeks to involve industry in the management of the resource. It recognises the importance of a continued role for the state but also identifies the importance of industry involvement if greater compliance and lower implementation costs are to be achieved. The approach does not set out to determine what regulatory instruments are to be used and could, in practice, accommodate a mix of such instruments as the complexities of the fisheries may require.

In an open access regime for a common pool fisheries, fishers have no property rights over the fish they are harvesting until they actually catch a fish (occupatio). There is thus a competitive race to catch fish before someone else harvests them. When entry is limited, the number of participants in the fishery is restricted and value is created in the right of access. This holds for whatever method of limiting access is chosen.

1. The sole ownership option

'Sole ownership' is used here in the broad sense of the right of a single entity to have the exclusive use of the fishery and to control fully production and sale of the product. Examination of the concept offers useful insights into the nature of solutions. Although sole ownership is acknowledged as a theoretical solution (Gordon 1954, p 31; Scott 1955, p 116f) there has been no concerted effort to

solve the problems of depletion and over-capitalisation through sole ownership. This probably implies recognition of the social, economic and political costs of the dislocation that would result from moving from the real world of fishing, dominated in many countries by a mix of artisanal fishers and industrial enterprises of various sizes, to the existence of a sole appropriator. This would certainly be the case for Namibia. H. Scott Gordon establishes that the "social optimum coincides with maximum monopoly revenue" (Gordon 1954, p141) in a fishery. Gordon is not considering any price effects and is examining maximising the yield of a fisheries resource and "not a privileged position" (Ibid.). Gordon is referring to a complete appropriation of all of a natural resource in a particular location by one owner (Scott 1955, p117) and not to monopoly as in standard monopoly theory.

A. Scott expands on Gordon's observations (ibid.). He recognises the problem that the potential efficiency gains of a sole owner may be offset by the danger of the social loss through "the creation of some immense sole-ownership organisation" (Ibid., p116). Scott argues that this theoretical position is true only if the non-monopolist sole owner attempts to maximise profits and to maximise the present value of their enterprises in terms of the market rate of discount (Ibid., p124).

D. Squires, in a paper exploring total factor productivity in industries that exploit a common resource, argues, in the case of multiple firms, that each firm acts as if the resource has no user costs (Squires 1992). In contrast, the sole owner must contend explicitly with the user cost because the decisions on utilisation of the resource becomes endogenous through the choice of extraction rate and input usage.

E.A. Keen resurrects the idea of sole ownership on the grounds that its theoretical strength deserves more attention (Keen 1983). He observes that limiting entry in fisheries by regulation has not worked well because rights have focused on harvesting and not on husbandry. The fisherman's incentive is to take the best first and to continue fishing as long as marginal costs are met, regardless of the effects on the resource. Limiting entry can be very costly to the state with the cost of regulating many fisheries by far exceeding any revenues which the state may gain from the sector. A state monopoly, Keen argues, would largely eliminate this problem.

Keen then argues the case for sole public ownership. He cites Scott's point that "to secure efficient management of natural resources, the property must be allocated on a scale sufficient to ensure that

one management has complete control of the asset" (Scott 1955, p 116). Keen takes the view that the optimum size management unit is the world's oceans if the physical nature of the resource alone is considered. This interconnectedness of the world's oceans was reflected the position that opposed the movement towards EEZs at the beginning of 3rd United Nations Conference on the Law of the Sea (UNCLOS III).

Political realities require that a management unit smaller than the world's oceans be found, although the evolving global system of governance of fisheries, expanded upon in Chapter 5, echoes these arguments. Keen advocates managing on the basis of individual ecosystems, despite the fact that ecosystems often fall within the jurisdiction of more than one country thus requiring co-operative arrangements between nations.

Keen sets out to counter opposition to public monopoly ownership. There is no inherent reason, Keen contends, why a public fishery agency would not function as well as most large corporations if distorting effects of the special political relationships can be controlled.

No empirical evidence exists of an efficient state owned and operated fisheries which supports the sole public ownership option. On the contrary, considerable evidence exists of highly inefficient state fisheries. The fisheries of the former USSR in 1989, for example, was estimated to generate gross revenues of US$5 000 million but had operating costs of US$10 000 million to US$13 000 million, thus generating an operating deficit of between US$5 000 - US$8 000 million per year (FAO 1992, p140).

The theoretical value of the sole owner argument lies in the insights it offers into the other approaches to fisheries management discussed below. All of these, it will be argued, ultimately depend for their success on the degree to which institutions and incentive structures can be developed which will induce fishers to act collectively as a sole owner of the resource.

2. Co-operative management of common pool resources

Following the extension of jurisdiction and what were open access fisheries coming, de jure, under the control of coastal states, the solution to the common pool resource (CPR) depletion problem in fisheries was almost universally seen as resting on regulation by central authorities. Private property rights solutions, discussed below, followed the poor performance of regulation as a solution. A body

of literature then started to emerge based on empirical studies which showed that, in certain circumstances, self management of common pool resources have worked well in avoiding tragic outcomes, in contrast to Hardin's assertion (see Ch3, 1.1). Numerous examples have been cited (Ostrom et al., 1993; Bromley 1992) of CPRs being sustainably managed over extended periods.

Ostrom and others have examined a now sizeable case literature which has firmly established that it is by no means true that a CPR will necessarily be depleted and perhaps destroyed and that there are alternatives to regulation by a central authority or privatisation.

The question arises as to why, in some circumstances, appropriators of a CPR compete to the point of seriously depleting the resource, while in others they choose to negotiate and co-operate and, in so doing, obtain a Pareto superior outcome.

Arising out of case studies presented to the Conference on Common Property Resource Management in 1985, participants identified factors associated with the emergence of a vehicle for negotiation and co-operation which Ostrom refers to as an "appropriator's organisation" (Ostrom 1992).

Three sets of variables were identified; those relating to the resource, those relating to the relationship between supply and demand and those relating to the appropriators of the resource themselves.

The CPR needed to be sufficiently small with well defined boundaries so that the appropriators are able to develop an accurate knowledge of its external boundaries and a detailed knowledge is developed of the condition of the resource using reliable indicators.

As a result of scarcity of supply, an awareness is developed among appropriators that their withdrawal of resource-units is interdependent. The claims of at least some appropriators must be sufficiently large that they will be motivated to pay for the initial costs of organising an appropriators organisation.

Finally, the number of appropriators must be small enough to keep the costs of communicating and decision making low. The appropriators live close to the CPR, there must be a degree of homogeneity and the appropriators must have some previous experience of organisation at least at a minimal level. The right to appropriate resource units and to exclude others from doing so needs to be certain and sustainable and they must have the freedom to exercise local initiative.

From an analysis of these three sets of factors, Ostrom identified four essential elements that need to be present if a CPR is going to be successfully managed by an appropriators' organisation(AO):

1. Participants must have a common understanding that continuance of their independent strategies will substantially damage a resource which they consider important for their survival. The capacity to develop this perception relates to the size of the CPR, the level of scientific understanding of the resource and the extent to which the appropriators recognise the interdependence of their offtakes (ibid., p301). Communication is the key to developing a *common* understanding. These are more likely to occur in a small, local CPR.

2. They must share a view that co-operative strategies are possible that reduce the risk of serious harm to the resource on which they all depend. There needs to be an understanding that individual strategies are sub-optimal and that an alternative co-operative strategy can produce an improved result and can practically be made to work (ibid., p302).

3. They must have confidence that most of the other appropriators from the CPR can be counted on to change strategies if they themselves promise to do so. This mutual trust and reciprocity tends to be easier, the smaller and more intimate the group of appropriators and where peer monitoring is a practical option. Formal policing, formal surveillance and investigations and formal courts may be used but are costly and the costs may be reduced through the development of relationships of trust and reciprocity (ibid., p302).

4. It must be reasonably clear that the cost of executing future co-ordinated strategies is less than the benefits to be gained from the adoption of co-ordinated strategies. These costs are affected by characteristics of the group, including the size of the group and its knowledge and experience of organisation. The costs of group decision making tends to rise with the size of the group making the decisions (ibid., p301).

The essential elements above, which apply to a CPR if it is to be successfully managed through co-operative arrangements, tend to relate to the relatively small size of the CPRs which Ostrom discusses. Communications, peer monitoring and thus mutual assurances are more easily achieved when appropriators are in daily, face to face, contact with each other. Understanding the limits of the resource and gaining a mutual understanding of the state it is in, become easier the smaller the CPR.

It could be argued that size of a CPR is a critical factor relating to the means that could be employed to manage the resource. The ease with which appropriators are able to observe the actions of other appropriators and thus monitor the extent to which they are keeping to the agreed set of rules is affected by the size of the CPR and its physical characteristics. Observation of what is happening in a bay may readily be possible, while observation of the activities of fishers spread out over hundreds of thousands of square kilometres of fog-covered ocean space is clearly much more problematic.

Thus the confidence that is needed for successful implementation of a self-management regime in a CPR is virtually impossible to achieve in the case of a large marine fisheries without the assistance of an agency which is able to guarantee compliance. This is a function which the state is best able to provide but must do so in a way that instils confidence in itself among the set of appropriators. If there is a confidence in the fairness of state enforcement of the rules which are at least accepted as legitimate, the state could provide a facilitating function in the management of the resource.

The management of the fisheries at a national level could encompass different approaches, depending on the particular circumstances of each fishery. There is no particular reason why, within a national fisheries management system, a particular fisheries could not be managed by the fishers if the conditions were met for them doing so in that particular fisheries.

A possible candidate in the Namibian fisheries sector for management in this way is the rock lobster fishery. The rock lobster stocks are found in limited, well defined locations on the southern Namibian coast where they occupy inshore rocky habitats up to a depth of about 70 metres. The numbers of appropriators are relatively small, and the skippers and crews of the vessels tend to know each other as they work in close proximity on one or other of the fishing grounds. Peer monitoring would therefore not be problematic. There is an acceptance of limitations on catch both in volume and size of individuals harvested[13]. In 1994 there were 40 vessels licensed in the rock lobster fishery; 34 of these belonged to the two big players in the industry with processing plants onshore and 6 to smaller private boat owners. If self-management arrangements were to be agreed for this fishery, it would be important to grant the quota to the vessel crews and skippers rather than to the factory and fleet owners as the link between welfare of the crew and skippers and the health of the stock would be

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[13] This picture was gained in large part through extensive informal discussion with three lobster boat skippers in Lüderitz.

strongest. Fleet and factory owners would be more ready to risk the long term health of the stock due to investment in hardware, than would the crew and skippers that they employ (Francis et al 1993, p64).

A degree of state involvement would remain necessary. Even in the case of the rock lobster, alternative uses of ocean space intervene, such as the possible effect of underwater diamond mining taking place off that same area of coast (Oelofsen and Otto 1995, p333). Any harvesting of mussels, on which the rock lobster feed, or disturbance of the kelp beds in which the larvae develop, could drastically effect the stock. The case was made for ecosystem management as an integrated whole; this would not preclude the method of management being much closer to self-management as a nested institution in the overall management of the Benguela ecosystem's stocks.

The examples Ostrom cites are instances where appropriators' organisations have emerged 'naturally', without the assistance of an outside agency. There are many other instances where some of these conditions exist but where no agreement is reached on how to manage the CPR, let alone successfully implement the process. There may be a clear understanding that individual strategies are sub-optimal and that an alternative co-operative strategy could produce a Pareto superior outcome (ibid., p302). These could readily exist in a large marine fishery in which the problems of peer monitoring and enforcement, exclusion of outsiders and scientific uncertainty, may preclude effective implementation. In such instances the state could provide a facilitating role.

Providing workable institutions that produce incentives towards the objective of the sustainable optimal usage of the resource could be viewed as the provision of infrastructure for the fisheries. The complexity of fisheries management overlaid with conditions of considerable scientific uncertainty means that there is no simple solution to the problem of management. Rather, a set of solutions, tailored to the varied particularities of the fisheries and the country, needs to be constructed.

The importance of the work of Ostrom and colleagues is that they offer guidance for the design of rules for institutions that could to be created for large-scale user-group organisations, which could facilitate more efficient management of marine fisheries.

Problems with the Ostrom analysis must be noted. Firstly, Ostrom tends to ignore the costs that may be imposed on those who are excluded from access to the resource. Outsiders may be expected to bear the cost themselves. However, the costs of their exclusion may have trade or other repercussions for the excluding country (Queirolo and Johnston 1989) in cases where the fleet of a major market are involved.

Secondly, it may also be true in an Ostrom solution that, by accommodating those that remain, possible resource rents are still dissipated and that it may not be biologically or economically optimal although it may be stable and sustainable. Scott Gordon demonstrates the possibility of this occurring (Gordon 1954).

3. Private Property Rights - Individual Transferable Quotas

It has already been noted that any solution to the depletion of an open access resource and the economic phenomenon of excess capacity developing under these conditions, lies in the establishment of property rights. These need not be private property rights as can be seen from the discussion above. However, various attempts have been made to establish private property rights in fisheries, the most prominent of which is the right to harvest a percentage of the total allowable catch (TAC).

Individual transferable quotas (ITQs), the name by which perfectly devisible, transferable and tradable quotas are best known, evolved from the regulatory practice of setting a TAC and then dividing the TAC into individual quotas. ITQs are now by far the most discussed and extensively promoted approach to fisheries management.

In an ITQ system, quota holders own rights to specific percentage shares of the total catch. Usually, depending on how the system is designed, they can buy, sell, lease or inherit these property rights in the same way as would be possible with other forms of property. This right to a stream of benefits, the right to harvest a specific percentage of the catch, held in perpetuity, constitutes a private property right (Arnason 1991, p410). It is, however, a right of access to and withdrawal from a publicly held, common pool resource and is not a right to the resource itself. This has led some to define it as "quasi-private property" (McCay 1996a).

The physical attributes of large marine fisheries make it difficult in the extreme or, in most instances, impossible to divide fish stock on a territorial basis other than for certain sedentary species. Initially

the focus on biological management brought about the idea of setting a total offtake from a fish stock, usually based on a percentage of the total estimated biomass of the particular stock, which came to be referred to as a total allowable catch (TAC). The fishery would remain under open access conditions for the season which would close once the TAC had been caught. In many fisheries no attention was given to the economic aspects, particularly the negative externalities generated by the open access nature of the fisheries.

The extreme case of the U.S. Pacific halibut fishery illustrates the point (Pearse 1992, p73; Anderson 1977, p202). Each year a TAC was set for the fishery. Access to the fishery was not restricted but instead the season was closed when the TAC had been caught. The regulation of the fishery was seen as a biological success but an economic disaster. Gradually, as total fishing effort committed to the fishery increased, the length of the season decreased until, in 1989, what had become known as the halibut derby was only 36 hours long (Pearse 1992, p73)!

Halibut can be fished all year and fetches the highest prices when marketed fresh. Instead, quality was lost through rough handling in the desperate race for fish and most of the catch had to be frozen and was marketed at prices lower than those fetched for fresh halibut (ibid.). In some instances capital and labour were idle for most of the year, although many vessels geared up for another fisheries as well. An ITQ system was introduced for this fishery in 1991 and the economic improvement has been considerable. Had the total allowable catch been divided into individual quotas (IQs), which were not transferable, most of this improvement would still have occurred because the incentive would change to seeking the most economical way of utilising the quota granted. The advantage of being able to trade the quota occurs at the margins.

Debate surrounding ITQs focuses on the economic and administrative efficiency of the system, whether they promote optimal resource use, questions of equity and questions of governance in an ITQ system. The allocation process has proved to be controversial in instances where the system has been implemented as it potentially involves access to considerable resource rent and associated problems of rent-seeking unless it is sold in open auction, in which case equity problems arise.

3.1 Economic and administrative efficiency

The under-utilised capacity of a fishing vessel may be brought into production by the granting by the fisheries authority of quota sufficiently large to utilise the fishing capacity of the vessel and by excluding excess capacity from the fishery. This has happened under various IQ schemes and a large measure of rationalisation of fishing effort can be achieved. Thus quota does not need to be transferable to achieve most of the benefit. An IQ scheme succeeds in changing the emphasis from a race for fish to creating an incentive to minimise costs.

If, however, a quota is divisible and transferable, as is the case with ITQs, then theoretically it facilitates greater efficiency through the emergence of a market for quota. As so many factors are associated with fishing effort, the estimated catching capacity of a vessel in one year may be less than what it is in the next year, for example, as a result of a change in environmental conditions and the consequent dispersion of fish stocks. A vessel owner with quota insufficient to operate the vessel at its optimum, can purchase quota so as to operate at that optimal level and not waste the potential rent on capacity in excess of what is needed to harvest the quota. Anderson demonstrates how four fishers, all operating at a loss, and doing so below the optimal for their individual vessels, may all profit through trading their individual quotas (Anderson 1977, pp216-219). A vessel owner seeking to minimise costs per ton of fish caught or to maximise catch per unit of effort, may purchase extra quota in order to be able to utilise the vessel at its optimum. In addition, there would be a tendency for an efficient quota market to allow quota to go to the most efficient fishing firm (Arnason 1993, p337). This is true only if the market is free and open and no distorting factors, such as subsidies, exist which could mean quota ultimately going to the best subsidised firms.

If the quota is granted permanently then there will be a tendency to adjust the fishing capacity of the fleet to the socially optimal level. In the long term, only the most efficient firms will harvest the fish and these firms will not hold excessive fishing capital. If they are not fully efficient it will be to the mutual advantage of firms to sell or buy, with the outcome that the most efficient firms harvest the fish. The capital stock of the fishing fleet would tend towards the socially optimal level (Arnason 1993, p337).

Considerable confusion exists in the literature in the debates relating to individual transferable quotas. R. Arnason quotes Scott in support of the institution of private property rights. He claims that Scott

> "noted that a single informed owner of a fishery would not fall into the trap of excessive exploitation of the resource. Thus, from this point of view, the fisheries problem is caused by the lack of private ownership over ocean resources or, in other words, the common property nature of ocean resources" (ibid., p335).

Scott's argument quite clearly identifies the benefits of sole ownership but does not argue that it needs to be private ownership. On the contrary, he identifies them as being

> "maximizing owners, associations, co-operatives or governments" (Scott 1955, p124).

A more accurate implication of Scott's analysis is that the set of appropriators must emulate, as closely as possible, the sole owner paradigm.

Frequently credit is given to the institution of ITQs for the economic impact brought about by a characteristic not particular to ITQs. The allocation of quotas without transferability quantitatively specifies the right to fish and, in so doing, dramatically reduces the competitive race for undefined shares of the catch (Pearse 1992, p76). This element, which is not particular to ITQs, eliminates the perverse incentive to invest in excessive fishing effort. Thus under a TAC and quota system, or IQ system, the incentive became to reduce costs rather than harvest as much of the total allowable catch as possible before other fishers do so.

It would seem that the claim that ITQs can bring about the efficient utilisation of fishing effort is correct but not exclusive to ITQs. A TAC and quota system establishes the same incentive although the capacity to trade quota under an ITQ system enables the fine tuning of allocation of fishing effort towards an optimum. Thus under an ITQ system a fisher will be able to either buy or rent more quota if the vessel being used has unutilised capacity or it will be able to sell or rent out quota in the event of having quota in excess of the capacity to harvest.

3.2 Optimal resource use and conservation:

The intuitive argument in favour of ITQs in relation to conservation is that if fishers have a direct stake in the health of a fish stock, then a sense of stewardship in the resource will be promoted and

there will be the incentive to use the resource at a level approximating the maximum economic yield. If the holder of quota has a right to a percentage of the TAC, then as the TAC rises with improvement in stock size, the value of the quota will increase as it would represent a right to a larger quantity of fish. Theoretically this should hold true until an optimal level of fishing is reached.

If the owners of a quota have a relatively high private discount rate they would place a relatively low value on the stream of net discounted benefits expected from holding the quota. If this value is less than the current market value of the fish, then there would be a tendency to fish the stock to extinction. Anderson argues, however, that transferability could tend to correct for this. Potential buyers with a lower discount rate would place a higher value on the stream of net benefits which would accrue from purchasing the quota. They would then offer a higher price for the quota than the returns the owner would expect, using the owner's discount rate, from fishing out the stock (Anderson 1995).

This would, of course, depend on whether potential buyers with a lower discount rate are available; there may not be if there is a lack of confidence about the future of the fish stock. This may be, for example, as a result of suspicion that other fishers are exceeding their quota. As peer monitoring alone cannot be relied upon in a large marine fishery, it falls to the state to ensure that property rights are respected. It may also be because lack of knowledge of the stock being fished, such as Namibia's orange roughy stocks, could raise fears that the stock is in the process of being fished out and that optimising requires getting as much of it before others do. Again this involves the state in a role of ensuring monitoring of catches, enforcement of regulations and of providing the public service of scientific research. This ought to be provided in the public domain as it underpins the public interest, that of both present and future generations.

The temptation for a fisher to evade restrictions or regulations in the quest for greater profit may be high, particularly in instances where the capital cost of entering the fishery is very high. In an ITQ system the discounted stream of future resource rents becomes capitalised and the costs of entry rise very considerably. Thus the free rider problem is not automatically solved by making quotas transferable. A fisher may well decide to free ride on the restraint of others, who keep to the rules, by harvesting more than his quota. There is in fact no inherent reason why a fisher would not cheat, if the opportunity arose, and harvest more than his or her quota. Prices for quota in an ITQ system can be very high, placing considerable pressure on a fisher to gain a reasonable return on the investment

in quota. This is particularly true in instances where the fisher has not been the recipient of large windfall gains when the quota was first allocated and has instead purchased the quota. Pacific halibut quota was trading, for example, at about CDN$20/lb in 1995 (Grafton 1995), that is, about US$32 370/ ton. The fisher will seek a return not only on physical capital but also on the cost of quota which becomes a capital asset. This additional pressure on the fisher, increases the incentive to free ride.

The logic of the theory suggests that the group of quota holders could be entrusted ultimately with determining the size of the TAC as part of the self-management process that could evolve. If the TAC is optimum then an increase in the TAC will result in a fall in the biomass and will ultimately lead to a fall in the value of quota holdings (Pearse and Walters 1992, p167-182; Anderson 1995). Thus there would theoretically exist an incentive not to set the TAC at a level beyond the maximum sustainable yield (MSY).

Empirical evidence suggests otherwise. Francis, Gilbert and Annala, who work for the New Zealand fisheries management authority noted that

> "Faced with a scientific assessment showing a serious decline in a currently profitable fishery, New Zealand quota holders have shown a strong tendency to reject the assessment. This is true even when the assessment has been carried out, or vetted, by their own consultants and even when based on a measured decline in commercial catch rates" (Francis et al 1993, p64).

New Zealand and Iceland are the two countries that have implemented ITQs most comprehensively. Decisions which fishers may make are not solely related to the value of the quota they may hold. They consider also their capital and operating costs and product prices. A reduction in biomass may not be reflected in a reduction in catch rates, which are directly observable by fishers, particularly with aggregating species. This can lead to a reluctance to accept the scientific evidence (ibid.). Francis *et al* conclude that a major change in management culture is required among quota holders (ibid., p64).

This reluctance on the part of industry arises in part out of the scientific uncertainty surrounding estimates of the size of biomass in fisheries[14]. Thus, if a fishing company is burdened with even

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[14] See discussion Chapter 7, 2.1.

higher financial commitments than would be the case if it had not needed to purchase ITQs, and there is scope for doubt offered by the science, there is a tendency to rely on the more optimistic assessment of the state of the stock rather than on a pessimistic or medium assessment. This applies particularly to fishers who have had to purchase ITQs, as opposed to gaining them through an initial free allocation; the increased capital costs may constitute an additional incentive to fish beyond what the particular stock can sustain. This flies in the face of the precautionary principle which itself was established as a common sense way of dealing with scientific uncertainty (ibid.).

This evidence would suggest that a conservation ethic is not encouraged by an ITQ system if the appropriators alone make the decisions on the size of the TAC. The tendency to risk the stock relates, in part, to the enormous cost generally associated with the purchase of quota in an ITQ system. If the cost were not as great, the stakes would not be as high, and the more amenable would be the attitude of appropriators towards a precautionary approach to deciding the size of the TAC. This could be achieved by instituting a tax on the quota when it is introduced so as to capture, on an annual basis, the resource rents for the state and, in so doing, reduce the value of the quota. The royalty charged by the state to capture the resource rent becomes part of the fishing company's operating costs instead of it being part of the capital costs of the company.

If an ITQ system is only introduced once the stock has recovered, instead of when it is depleted, as is so often the case, the price of a unit of quota as a percentage of total catch is not likely to be so low as to produce huge windfall profits, as the value of quota should already be relatively high.

Little evidence exists suggesting that conservation can be better managed under an ITQ system than under any other system although, apart from the above consideration, there is no reason to suggest that it would be significantly worse. Some of the New Zealand orange roughy stocks, managed under an ITQ system almost since the inception of the fishery, have collapsed. The biomass of the Chatham Rise stock is now estimated to be only 10-16% of the virgin biomass level while that of the Challenger Plateau is about 20% (Duncan 1996). The biomass of snapper, New Zealand's most valuable and largest target stock before deepwater fisheries developed, is now only half of what is needed for an estimated MSY (ibid.). It is also true, however, that other systems of fisheries management have witnessed stock collapses because of poor scientific knowledge, rash management decisions or environmental perturbations or, more commonly, a combination of all of these. Evidence exists that quota holders have sought to increase monitoring and enforcement under an ITQ

programme at their own expense, for example in the British Columbia halibut and sablefish fisheries (Grafton 1995), may also occur in a self-management co-operative system. It demonstrates that fishers, under whatever property rights regime they operate, when they recognise that collective action offers a Pareto superior outcome, are prepared to pay for policing to ensure that no one in the system breaks the rules they agree upon. This does not necessarily indicate the emergence of a conservation ethic any more than under another system.

3.3 Equity and the distribution of rents

The Law of the Sea Convention (1982) grants to the coastal state the right to explore, exploit, conserve and manage its fish stocks (UN-LOSC 1982, Article 56, (1)(a)). For practical purposes this has been widely regarded as having granted to the people of coastal states a type of collective ownership of the benefits accruing from these resources (Hannesson 1993, p129; Clark 1993, p341). The right of the Namibian people as a whole to benefit from the country's marine fisheries resources is clearly recognised in the Constitution (see Ch. 5, 1).

A controversial question which arises when an ITQ system is established is what happens, or what should happen, to the resource rent. Most of the fisheries that have been placed under an ITQ system had previously been fished under conditions where the resource rent had been completely dissipated and the fishing companies involved were not making excessive profits. Consequently, when granting the ITQs, no consideration was given to future resource rents and fishing companies made considerable windfall gains as stocks improved and the value of a unit of ITQ rose as it came to represent greater mass of fish.

Questions of equity arise over the initial allocation of quota, the eventual distribution of quota and on the distribution of resource rents.

Almost universally, initial allocation has been made by administrative decision (Morgan 1995, p380) and has invariably included a 'grandfather' provision which recognises the rights of those already in the fishery.

Allocating by administrative decision has the advantage of allowing the administrative authority to take into account social objectives such as addressing questions of equity, but also carries with it some serious disadvantages such as an incentive towards rent seeking behaviour.

In most of the fisheries where ITQs have been introduced, resource rent is generally completely dissipated at the time of introduction of the ITQ system. In order to encourage fishers to accept the new system, the quota price or fee has been set at zero or very low, as the fisher's discount rate is very high and they would not take up the offer otherwise. In the longer term fishing companies tend to make large windfall gains as a result (Ibid., p381). Strong objections have been raised to this phenomenon[15]. This capture of resource rent by private companies can then become capitalised through subsequent quota transactions (Ibid.). The cost of acquiring quota once the system is established becomes a considerable barrier to entry into the fishery.

It may be argued that the problem of capturing rent by the state at the time of allocation of the quota under an ITQ system could be solved by two possible methods.

Firstly, the state could set a price that represents the discounted stream of rent from the resource. The difficulty is which discount rate to use. The preferable discount rate would be the social discount rate, reflecting the value which the wider community would place on the resource. This would also reflect inter-temporal equity required if the discount rate is to be seen as socially just. The uncertainty of the future state of a fish stock can dramatically effect the rent associated with the stock and therefore what discount rate a fisher may use. Inevitably the discount rate of an individual fisher is likely the be considerably lower than the social rate of discount.

An additional problem relating to future resource rents and, therefore, the net present value of the future stream of rent, should be considered. The FAO calculated that total annual operating deficit for the global fisheries sector was about US$ 22 000 million (FAO 1992, p145). Such an absurdly large deficit, which the FAO ascribes to over-capacity and heavy direct and indirect subsidisation in many countries (ibid., p149-152), must produce enormous distortions in the sector globally. As rents are associated with market prices, the rents we associate with at least some species are probably very

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[15] There was an extensive debate on this issue on the electronic forum, FISHFOLK, found at [fishfolk@mitvma.mit.edu], October-December 1995.

unlike what they would be in different circumstances. Rents associated with a particular species could change considerably in the course of time, making a long term, discounted social valuation of the resource problematic.

If one were able to overcome these problems, the social discount rate for a renewable resource such as fish is likely to produce a net present value considerably higher than a buyer is willing to pay as the individual's discount rate will not take into account intertemporal values (OECD 1994, p189). In addition, at the allocation stage, there is less certainty over the long term health of the resource, because the potential quota holder does not have sole stewardship; a relatively high discount rate will thus be used by the buyer.

Alternatively, government may announce a royalty to be charged for harvesting the resource, set so as to capture the rent of the resource at the time of establishing an ITQ system. If the royalty is introduced at a later point, when the unit market value of the ITQ has risen, capitalising the discounted stream of resource rent, the market would be detrimentally affected and could collapse if a royalty reflecting the rent were to be introduced.

Eypórosson argues that the ITQ system in Iceland is "an irreversible social experiment" because the Icelandic state could not afford to buy back the quota (Eyborsson 1995, p17). It would also be politically impossible to impose a royalty on the catch as this would induce a collapse of the quota price. He argues that the relatively small group of quota holders in Iceland have considerable political power (ibid.).

Annual royalty payments are likely to be more successful in capturing the resource rent than attempting to capture the rent through the initial sale of quotas using discounted values.

A consolidation of quota has taken place in the Icelandic fishery (Palsson and Helgason 1995); the total number of quota holders was reduced from 535 to 391 between 1984 and 1994 (ibid., p9) and the very large companies increased their aggregate share of the quota by 78.4% at the expense of smaller operators (ibid.). In New Zealand, the top three quota holders now hold 60% of the quota, while the top 30 companies hold 80% of the quota (Duncan 1996). Dewees argues that there had been considerable consolidation in New Zealand before ITQs were introduced; 10 companies landed

67% of the catch and this had grown marginally to 68% in 1995 (Dewees 1996). There has been consolidation in the small scale sector (ibid.).

There also appears to be "strong post-ITQ consolidation" in the Nova Scotia under-65' mobile gear groundfish sector, which was placed under an ITQ system in 1990 (Mc Cay 1996b).

Feudal metaphors have emerged among interest groups in both the Icelandic and New Zealand fisheries. While advocates of ITQs have argued that, as catch per unit of effort rises in ITQ systems and the profitability of fishing companies increases, fishers will also be able to bargain for higher incomes (Arnason, 1990).

The biomass for cod was further reduced in Iceland following the introduction of an ITQ system (Palsson and Helgason 1995, pp17-22). As the TAC decreased, permanent quota shares were effectively devalued. Many small operators were forced to sell out their quotas or in some cases lease them out because they were left with insufficient quota to keep their boats active throughout the fishing season. The more affluent companies also, often referred to as the "quota kings" (Kvótakóngar) or "lords of the sea" (sægreifar), faced with decreased catch quota, but able to finance purchases, began to accumulate quota.

Pálsson and Helgason (ibid., p19) demonstrate that the percentage of the large companies leasing from others went down from 75.0% to 38.1% in the course of 1992-1993 while the proportion of small fishers renting quota from larger companies rose from 46.3% to 65.6% during the same period. In order to stay in the fishery the smaller companies needed to lease back quota, paying the larger companies some 40% of the value of the catch while at the same time bearing all the normal expenses of fishing. Fishers in Iceland receive in payment a fixed share of the value of the catch (a widespread international practice), calculated now in Iceland net of the quota rental price. Fishers working for "tenant" companies, as they have come to be called, have had to suffer major wage cuts, in effect subsidising the quota leasing.

A similar phenomenon, with similar references to feudalism, has been noted in the New Zealand fisheries (Duncan 1996). Duncan also notes that as a result of the increased costs, the incentives to dump smaller fish in favour of larger, higher value fish, or 'highgrade', and black market have increased (ibid.).

It is questionable whether the "hidden hand" of the market has succeeded in shifting quota to companies able to use it more efficiently. It seems rather that the "hidden hand" has assisted the wealthier companies to extract a greater portion on the profits at the expense of poorer participants in the fishery.

4. The Co-management concept

Co-management may be defined as "an arrangement where responsibility for resource management is shared between the government and user groups." (Sen and Nielsen 1996, p406). Other similar definitions exist: co-management is power-sharing between government and a group of stakeholders in the exercise of resource management (Pinkerton 1992, p331); sharing of management power and responsibility by the state and fishing community (Berkes and Kislalioglu 1991; Feeny et al 1990); a dynamic relationship between a national government and the community sharing authority for fisheries management (Pomeroy, 1993). Jentoft defines co-management as placing management part way between government regulation and community self management (Jentoft 1989). Most definitions include what ought to be regarded as an essential element in any definition of co-management, that is, the involvement not simply of the fishing community but of other interest groups in the fisheries sector as well.

Co-management describes an approach to management of a fisheries rather than a regulatory method. Co-management is not an alternative to gear-type restrictions, the use of taxes or levies or the use of ITQs. There is an implied recognition of the need for emulating as closely as possible the sole owner paradigm, of stimulating a process of co-operation between appropriators in the management of the resources and of the necessity of state involvement in the process. The term co-management has been used to define a wide variety of arrangements whereby appropriators are involved in management. Using classifications defined by Sen and Nielsen (Sen and Nielsen 1996, p407), co-management ranges from 'instructive' arrangements, where the state creates mechanisms for dialogue with users to inform them of government management decisions, to 'informative' arrangements, where the user group informs government of its decisions and the role of the state is reduced (ibid.). Sen and Nielsen offer five generalised types of arrangements in their classification of 22 co-management studies. Developing further earlier work by McCay (McCay 1993) and F Berkes (Berkes 1994), they establish the classifications presented graphically in Figure 15 below.

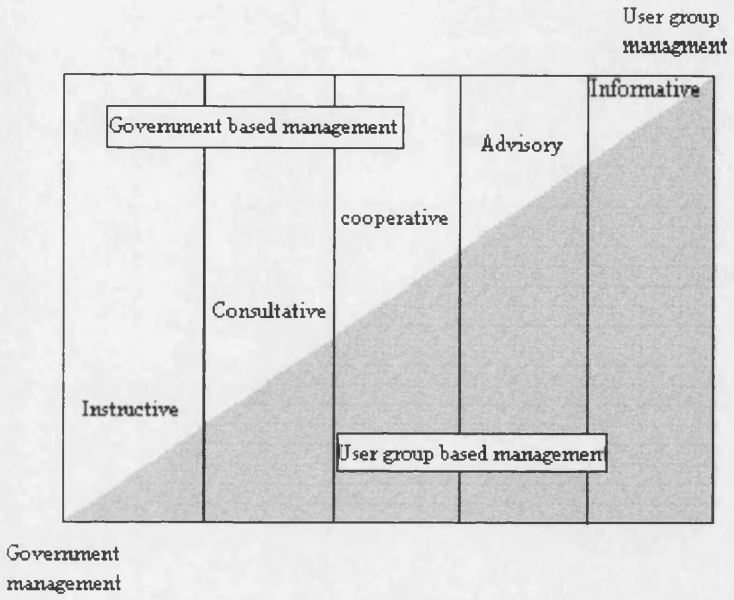

Figure 15: Spectrum of co-management arrangements (source: Sen and Nielsen 1996)

An *instructive* type co-management arrangement differs from centralised management only in that mechanisms have been established for dialogue with users, although the process remains one of government informing users of planned decisions. A *consultative* type co-management arrangement exists when mechanisms for consultation between government and users have been established but where decisions are still taken by government. *Co-operative* type co-management describes arrangements where government and users co-operate on an equal basis in decision making. *Advisory* co-management arrangements are those where the users advise government of decisions to be taken and government endorses them. Finally *informative* co-management occurs when government has delegated responsibility to user groups who are responsible for informing government of their decisions (Sen and Nielsen 1996).

This typology is clearly a simplification, for purposes of analysis, of a wide range of complex management scenarios. Each of these could encompass different management tasks with different roles taken by the state and the other interest groups depending on the nature of the management task and of the makeup and abilities of the interest groups.

Management tasks may include the formulation of policy, stock estimations, establishing access rights, harvesting regulations, including the TACs and quotas if these are used, monitoring compliance and enforcement. Each of these may be subject to different types of co-management. While it may be appropriate to involve industry in decision making regarding harvesting regulations, for example, it may not be appropriate to go further than to consult present users regarding decisions government might make about access rights. The particular political circumstances in the Namibian fishing industry, for instance, required intervention by the state to bring about a change from that which had been politically facilitated by the apartheid system.

A co-management system should include in the management process user groups and others who have a stake in what happens to the resource such as natural and social scientists, trade unions and those representing the public interest in relation to the resource. The role that these groups might play depends on who they are and how they are represented (Jentoft and McCay 1995). Different management tasks may require the involvement of different interests. While some decisions could be taken at a local level, others may need to be taken at a national or even supranational level (Nielsen and Vedsmand 1995).

It becomes apparent that a large number of fisheries management arrangements could fall within the broad categorisation used by Sen and Nielsen. The concept of co-management in its essence is a rejection of state minimalism and a recognition that the complexities of managing a common pool fisheries resource require a process of collective action, as opposed to competition among appropriators, involving the state in a movement towards emulating the sole owner paradigm.

This approach is also compatible with the insights offered by R.H.Coase (Coase 1960), and Michael Lipton (Lipton 1985). Lipton, reflecting on Coase's work, considers the problem of common pool resources in developing countries and argues that through democratic or participatory systems, it becomes easier to move away from the more expensive coercive systems of control or regulation of common pool resources and towards the more cost effective 'control-with-consensus'.

5. Conclusion

The **sole owner** analysis above focuses on both the economic and biological problems of negative externalities in the fisheries. As the sole owner alone carries the costs associated with exploitation of

the resource, the costs become endogenous. The incentive of husbandry is present, leading in theory to the exploitation of the resource in a biologically optimal manner. As there is no competition to harvest the resource before others do so, the incentive is focused on harvesting in the most economic manner.

In most fisheries there are a multiplicity of harvesters. The social impact of a sole appropriator being imposed on the fishery and the destruction of individual enterprise is unlikely to allow a sole operator to recruit suitably motivated fishers. The political impracticality of establishing a sole appropriator has led to little attention being given to this option. Such an institution would lack legitimacy among the population and is likely to lead to considerable undermining of the fishery.

The insights offered for fisheries management are, however, important. They stress the importance of changing fundamentally the way the fishery operates away from a competitive ethos to one of considered, co-operative utilisation of the resource in a manner that is optimal and can be sustained in the long run.

The successful **self-management** of common pool resources by the appropriators establishes the inadequacy of Hardin's tragedy of the commons thesis. Ostrom notes the three models offered in the literature to explain why natural resources are exploited to the point of endangering the long term viability of the resource (Ostrom 1990). While she acknowledges the usefulness of these models, she also points out the danger of assuming that the constraints continue in the empirical setting that were fixed in the model for purposes of analysis (ibid., p6). Essentially she proposes that if one relaxes the assumptions, it is possible to argue that common pool resources can be managed successfully, an assertion borne out by numerous empirical examples. If one examines these examples, it become clear that self-management works when the group of appropriators act co-operatively as a sole owner of the resource.

Private property rights in the form of **Individual Transferable Quotas** do seem to offer a satisfactory solution to the problem of overcapacity and leads to more efficient utilisation of inputs. However, many of the economic gains are achievable without making quota tradable and the institution of ITQs themselves seems to create its own set of externalities. Very strong incentives exist to cheat by high grading and black marketing, in part because of the very high prices which quota has tended to command.

The tendency for the number of appropriators to be reduced tends to negate efforts by government to realise greater equity in the use of the resource. There is evidence that appropriators in an ITQ system are sometimes drawn to work co-operatively to avoid the damaging consequences of working competitively and in order to protect the very high value of their quota holdings.

It would be possible to reduce some of the most damaging aspects of ITQs if, when the system is established, it is made clear that a royalty reflecting the value of the resource rent will be charged for use of the resource. If this is done, then the discounted stream of future rents will not become part of the capital assets of the company. Quota prices would remain considerably lower and would not form a barrier to entry into the fishery. Although they would remain part of the annual operational costs of fishing, avoiding the capitalisation of the resource rent could produce the added advantage of a company avoiding large capital costs which, in any one particular season, may stimulate the practice of high grading and dumping.

If the quota is not taxed from the beginning in such a way as to reflect the rent, it will become impossible to introduce it at a later stage. Iceland has discovered this (Eyborsson 1995, p17); the quota kings have become very powerful politically as they have accumulated so much wealth and the government of Iceland, a country that has a GDP per capita close to that of the United States (World Bank 1995), finds that it now has an irreversible fisheries management system as it cannot afford to buy back the ITQs. The introduction of ITQs in a fishery needs to be approached with great caution.

ITQs could eventually have a role in some of the Namibian fisheries. An absolutely essential prerequisite would be to establish a fairly accurate gauge of the resource rent associated with the fishery. It would seem preferable to only do so when the target stock has recovered to somewhere near it optimal level of productivity and the long term rent expectations can be more accurately assessed.

In many fisheries **co-management** is being practised to a greater or lesser degree although it is not usually referred to as co-management. It could be argued that the Namibian management system is closest to the 'consultative' model in the Sen and Nielsen classification in Figure 15 above. A feature of the Namibian management system is the Fisheries Advisory Council and there has been an effort to work more closely with the industry in understanding the science of the ecosystem and the fish stocks.

While co-management is an alternative to an antagonistic relationship between the industry and the management authority, it is not an alternative to regulation, ITQs or taxation. It is an approach that attempts to maximise the positive aspects of collective action but accommodates the need for state involvement and in so doing. It provides a framework in which, for a large marine fishery, the sole owner paradigm can be most closely emulated.

PART TWO

MANAGING THE STOCKS

Part Two of the thesis examines the response by the post-independence Namibian Government to the fisheries problems that the country inherited at independence in 1990. Independence for Namibia was significant for the management of the fisheries sector because, for the first time, it became possible to proclaim an EEZ and to introduce comprehensive management of Namibia's fisheries resources. With a state recognised neither by its people nor by the international community as legitimate prior to independence, Namibia's fisheries had been exploited largely by the fleets of foreign nations. Independence, and with it international legitimacy, brought the opportunity of a fundamental change of regime to Namibia's fisheries.

Chapter Five places the response of the post-independence Namibian Government in the context of the global fisheries regime. It examines how this international regime functions as a framework within which Namibia's fisheries sector problems must be resolved, as national management of fisheries is nested in a global system of governance of the resource. The objectives established in the fisheries policy for Namibia, the more specific targets which government set itself for the sector and the new fisheries regime it set up to meet these objectives and targets are examined in Chapter Six. This is followed by Chapter Seven which examines evidence of the extent to which the fisheries is being efficiently run so as to produce optimum benefit from the resource. Chapter eight analyses whether the new policy of directing greater benefit from the resource to Namibia and Namibians has succeeded in achieving its stated objectives.

Chapter Five

GLOBAL GOVERNANCE AND THE POST-INDEPENDENCE NAMIBIAN STATE

Namibia's fishing grounds were the last major fishing grounds to be brought under the jurisdiction of a coastal state as most others had done a decade or more earlier. Until independence they had remained an anomaly, the only remaining major fishing ground where, for most part, open access permitted a fisheries free-for-all. Independence was a significant event for the management of the Namibia's fisheries sector because the country, for the first time, was able to become part of a global fisheries regime through which Namibia gained jurisdiction over its fisheries and an internationally recognised legal right to benefit from them.

The response of the post-independence Government of Namibia to the problems it confronted in the fisheries sector need to be examined within the context of the international political economy of the global sector and within the framework of the internationally negotiated settlement, contained in the United Nations Convention on the Law of the Sea (1982), to which the Namibian state is committed.

This chapter traces developments in the international political economy of the fisheries sector and shows how this both contributed to the problems in Namibia's fisheries and led to the development of an internationally agreed framework offering improved opportunities for fisheries management at a national level. It establishes how the Law of the Sea Convention (UN-LOSC 1982) and other associated agreements constitute negotiated agreements for settling problems of the global marine commons, including those of the fisheries sector. National management of a fisheries thus becomes a nested institution functioning within a global regime. The chapter thus examines the application of the Law of the Sea Convention (LOSC) and other related international legal agreements to the Namibian fisheries sector, indicating Namibia's acceptance of its role in this global system of governance, and discusses the implications of these developments for Namibia's management system and the role of the Namibian state.

1. Development of the global problem

The historical development of exploitation of the global fisheries commons led to depletion of many major stocks and to the recognition, by a large number of global players, of the need to take collective action to limit exploitation of the commons. The emergence of the LOSC in 1982 and other developments in the international law of the sea placed Namibia in a position of needing to establish how it would relate to an already existing system of global governance of the fisheries sector.

1.1 The doctrine of the 'freedom of the high seas'

Up until 1990 distant waters fishing nations regarded what is now Namibia's EEZ as part of the high seas. As far as the international community was concerned, no legitimate Namibian government had declared an exclusive economic zone for Namibia and consequently the ancient doctrine of freedom of the high seas determined fishing practice.

The doctrine of the 'freedom of the high seas' evolved during the 17th Century. In 1494 the division of the Atlantic Ocean between Spain and Portugal by Pope Alexander VI was confirmed in the Treaty of Tordesillas (Churchill and Lowe 1992, p165). Early in the 17th century the great period of maritime exploration began. Emerging maritime powers began to oppose such claims. The Dutch jurist, Hugo Grotius, an employee of the Dutch East India Company, argued in his famous treatise, *'Mare Liberum'*, that property could exist only if the holder was able to defend it against others. As no-one was able to defend, occupy or exclude others from the oceans beyond a narrow strip along the coast, he argued for what became known as the doctrine of the 'freedom of the high seas' (Grotius 1608). The high seas and the fish within it belonged to no-one; they were *res nillius* (Churchill and Lowe 1992, p224).

The narrow strip of sea along the coast, the width of a cannon shot, with which it could be defended, became known as the territorial sea. This defensible strip of sea was regarded as sovereign territory of the coastal-state. For most of the four centuries between Grotius and the post Second World War period the territorial sea was generally 3 nautical miles wide (Churchill and Lowe 1992, p66).

Thus the regime that became globally recognised was one that meant that everyone had an open access right, shared with compatriots, to the fish in their own country's territorial sea and, in addition, a open access right, shared with the people of all nations, to harvest the fish found in the high seas.

Hugo Grotius argued in *Mare Liberum* that fishery resources were so abundant that no benefit would accrue from exclusive jurisdiction. Similar sentiments were expressed by Professor T H Huxley, the famous zoologist, at the inaugural meeting of the International Fisheries Exhibition in 1883, when he declared

> "I believe that the cod fishery, the herring fishery, the pilchard fishery, the mackerel fishery, and probably all the great sea fisheries are inexhaustible; that is to say that nothing we do seriously affects the number of fish. And any attempt to regulate these fisheries seems consequently, from the nature of the case, to be useless" (cited by Lees 1969, p269].

With a smaller global population and an available technology less efficient than today's at extracting fish from the ocean this may well have been true at the time. Doubts about the accuracy of these perceptions in the long term only became more common after World War II when fears emerged that certain stocks of fish were collapsing (Pearse 1992, p72).

The principle that free and open access to fisheries was thus entrenched and widely accepted among nations until the middle of this century. Open access does not present a serious problem of resource management if stocks are plentiful in relation to demand. It was this that changed in the post war period.

1.2 The post-World War II developments in global fisheries

The total world catch grew from under 20 million tonnes in the early 1950s to just over 100 million tonnes in 1993. The marine catch grew from some 18 million tonnes in 1950 to 70 million tonnes in 1995. Figure 16 reflects these totals and the marine catches for developing countries and developed countries. From the mid-1970s onwards, by which time many coastal states had declared exclusive economic zones (EEZs), the gap between catches by developing and developed countries began to close and at the end of the 1980s the catch of developing nations became larger than that for developed countries.

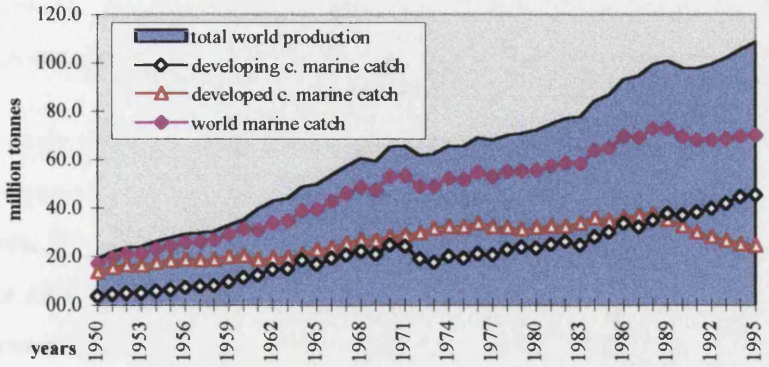

Figure 16: Growth of world total catch and world marine catch, and total marine catches of develop and developing countries. Source: Generated from FAOSTAT, Fisheries Primary Products, http://apps.fao.org/lim500/Agri_db.pl.

The global marine catch peaked in 1989 at 72.7 million tonnes and has not again risen above the 1989 level. The total catch has risen largely because of the increase in aquaculture production, particularly by China. The aggregates reflected in the graphs do not expose certain important developments in the global fisheries sector which need to be noted:

1. The increase in the world catch since the beginning of the 1980s was accounted for largely by the increased catch of five relatively low valued species. One of these was Alaska pollack, with an average unit value of about one third that of all other species. The others were Chilean jack mackerel, Peruvian anchoveta, Japanese pilchard and South American pilchard with an average unit value of about 10% of the average value of the global catch. (FAO 1992, p133).

2. The catch of all tuna has increased steadily during the last two decades; a million tonnes was added to the total annual catch as a result in the increases in the tuna catch between 1980 and 1989 (ibid.). As tuna is often caught on the high seas outside of national jurisdiction, the high seas have come under increasing pressure globally. This lead to the negotiation, under the auspices of the UN, of an agreement to tighten control on high seas fisheries (see 2.2.1. below).

3. The catches of four important species of high value demersal fish (Atlantic cod, Cape hake, haddock and silver hake) dropped from 5 million tonnes in 1970 to 2.6 million tonnes in 1989

(ibid., p135). Thus overall increases in catch were accompanied by a significant decline in the catch of certain high value species.

An FAO study (Garcia and Newton 1994) noted that 44% of the world's fish stocks for which formal assessments were available were intensively to fully exploited, 16% were overfished, 6% were depleted and 3% were slowly recovering. They concluded that urgent management measures were needed for 69% of known stocks. Although these figures are recent, the trend started to become evident from shortly after World War II with the collapse of the Californian sardine stock. The conclusion that the demersal high-value species were overfished and that a reduction of at least 30% of fishing effort was required to rebuild the resources (ibid.), means that global pressure for access to remaining stocks of these species is considerable.

These figures demonstrate that the LOSC was by no means a sufficient measure for resolving global fisheries problems and was not meant to be. It fulfils the essential task of creating a framework of jurisdiction necessary for ending laissez-faire, open access conditions for the world's fisheries.

1.3 The global costs and revenues for the fishing industry and their significance

The FAO calculated that total annual *operating* costs of the world's fishing fleet was US$92200 million for 1989 (FAO 1992, p145-7, also appendix 1) *Gross revenue* was estimated at US$70000 million for the global fishing industry. This gave an annual *operating deficit* of about US$ 22000 million. If an estimated US$32000 million is added to cover capital costs, the total deficit rises to US54 000 million (ibid., p146).

Such a remarkable state of affairs could be explained as follows: Open access still persists for many domestic fishing fleets operating within the exclusive economic zones of coastal states. In these circumstances excess capacity develops as long as marginal costs are lower than marginal revenue including the element that represents resource rents. In addition, in many instances where foreign fleets operate within the EEZs of coastal states, access is paid by the flag state government and not by the owners of the vessels. This is the case, for example, with European Union fisheries agreements with other states. Open access also still persists on the high seas and the catch on the high seas has tended to grow (FAO 1992, p165) although the Straddling Stocks and Highly

Migratory Species Agreement introduces some still to be tested regulation of fishing on the high sea (see discussion in 2.2.1 below).

The problem is compounded by subsidies. The Fisheries Association of Japan revealed that "the current credit balance extended to fisheries from both the commercial and Government sectors is about US$19 000 million" (Japan Fisheries Association, 1991, quoted in FAO, 1992, p149). It went on to say that "in order to support business entities in financial difficulties, the government financing system will assume their liabilities. The amount of liability taken over by the government has been substantial in recent years due to the severe economic status of the fishing industry" (ibid.).

The European Union fisheries sector also receives substantial support. Subsidies grew from US$80 million in 1983 to US$580 million in 1990 from the European union budget. In addition, member states subsidised to varying decrees their own fisheries sectors.

With such enormous subsidies existing in the global fisheries sector it would be remiss of the government of a developing coastal state not to consider the impact that this is bound to have on its own fisheries. If a market for quota were allowed to develop the issue that government must consider is that it is not a free market because of the existence of large scale subsidisation. It is not necessarily the most efficient who will remain in the fishery but could well be that the best subsidised remain. Thus the entry, or re-entry, into the Namibian fisheries sector of the Spanish industry, which receives substantial subsidies, for example, in ship building both from European Union sources and the Spanish Government, does not necessarily reflect greater efficiency. The same is true of joint venture arrangements where the foreign, better subsidised partner may well exercise most power within the joint venture relationship.

We know that open access provides an incentive to over-capitalise (Ch. 3) and it would seem that over-capitalisation is at the root of the problem. The problem of over capitalisation is also exacerbated by the relative ease of entry into the fisheries sector and the difficulties of exit. One needs only examine the rapid rate of capital growth in the white fish industry in Namibia. to see how easily and how rapidly this can take place. Thus the provisions of the Law of the Sea Convention and other associated agreements should be seen as necessary but insufficient for resolving the common pool resource problem in fisheries.

1.4 Two significant issues in the international political economy of fisheries for Namibia:

1. Spain has been and remains one of the most important distant water nations. About 50% of its total marine catch is taken outside of the north-eastern Atlantic and Mediterranean (FAO 1995a). When catches of groundfish declined in the north-west Atlantic in the 1970s, the shortfall was in part made up by concentrating extra fishing effort in Namibian waters.

On 6 April 1990, 16 days after Namibia attained independence, the European Commission was put under pressure in the European Parliament rapidly to conclude a fisheries agreement with Namibia. In the preamble to a question to the Commission, a Spanish Member of the European Parliament declared that:

> "the Namibian fishing grounds are of vital importance to the Community's freezer fishing fleet. More than 173 vessels fish in these grounds, employing more than 6 200 people at sea and indirectly creating a further 40 000 jobs on land" (European Parliament 1990).

The European parliamentarian was referring to Spanish vessels and fishermen from Galicia and processing factory workers in Galicia, Spain. Enormous pressure was placed on the European Commission to gain access for the Spanish fleet to the Namibian hake stocks, causing a diplomatic row to erupt when the Commission attempted to bully the Namibian Government into an agreement (Commission 1991a; MFA 1991). The Namibian Government resisted the pressure placed on it at the time to agree to access for the Spanish fleet.

This incident nevertheless emphasised the high stakes involved in the hake fishery, particularly in view of the reduction in global catch of high value groundfish species (1.2, (3)). It should not be particularly surprising, therefore, that Spanish companies have been finding other means of re-entering the Namibian fisheries sector in the absence of an EU-Namibian fisheries access agreement (Ch. 8, 5.1).

2. Over recent years the former Soviet fleet, which was heavily subsidised by the Soviet State, has collapsed. Of the 11.3 million tonnes taken by the Russian fleet in 1989, 82.3% was taken by what is now the Russian Federation, 14.1% by the European Republics of the former USSR and the remaining 3.6% was taken by the Asian Republics. The collapse of the centrally planned economy had a significant impact on the Russian fisheries. The Russian share of the Soviet catch was, therefore, about 9 million metric tonnes in 1989. By 1993 it had dropped to 6 million tonnes and by

1994 had plunged to about 3.5 million metric tonnes (FNI 1994, p6). The catch statistics of the European and Asian Republics also reflects a downturn of similar proportions. The collapse of the former Soviet fleet has been truly dramatic and part of the impact has been felt in Namibia.

The decision was made by the Soviet policy makers in the 1960s to greatly expand the Soviet fishing fleet. They compared quantities of protein that could be obtained from meat per unit of capital and labour with quantities of fish protein that could be produced per unit of capital and labour. They concluded that fish production, harvested from fishing grounds around the world, would use about half as much capital investment, one third of the production costs and one quarter of the labour requirements compared to those required in the production of an equivalent amount of meat in the Soviet Union (FAO 1992, p140). With stocks still abundant, the fleet grew in size and spread all over the world. As stocks declined and the catch per unit of effort declined, the central planning process continued to ensure that the necessary inputs were provided.

Over time, this process lead to an increasingly uneconomical fishing sector. By 1989 estimates indicated operating expenses were about US$10 000 million-US$13 000 million per year and gross revenues stood at about US$5 000 million. The operating deficit was thus US$5000-8000 million per annum(ibid.). This takes no account of the cost of capital. The vessels likely to disappear first, according to the FAO analysis (ibid.), would be the high fuel consuming distant water fleet. While local vessels operating in the Russia's own waters may still attract some subsidies, the distant water fleet would tend not to do so.

These vessels have been departing from Namibia's waters. With the collapse of the USSR, ownership of vessels went to privatised companies. It would appear that these vessels are being run on the basis of operating costs alone, with little provision made for maintenance. The real costs of running these vessels are not reflected in their Namibian operations. This has meant that other options have, thus far, not been able to compete with them, although one company has experimented using a Dutch vessel, the Tetman Hette (MFMR licences). The difficulty for Namibia is that the Russian fleet is not a sustainable option. There has been a decline in Namibian waters of the former Soviet fleet from about 65 vessels after independence, to 37 in 1994 and 27 licensed to fish in 1995

(ibid.). With the number of vessels decreasing there has clearly been an increase in the productivity per vessel, yet it would appear that these vessels are still struggling to survive in this fishery[16].

This section has demonstrated that the world's fisheries problems are those of a global commons. It has illustrated that there has been, and remains, a serious global crisis in the sector both in a biological and an economic sense and, in common with many other states, Namibia is both part of the crisis and affected by its impact elsewhere.

1.5 Global response: the state as a player in an embedded global system

The doctrine of the freedom of the high seas was essentially a doctrine of laissez-faire. Coastal state jurisdiction was exercised only over the three mile wide territorial sea and the international customary law of the sea developed surrounding these two basic concepts of the high seas and territorial seas.

The general principle of the doctrine was that users of the high seas are at liberty to do as they please (Churchill and Lowe 1992, p166). The 1958 Convention on the High Seas (HSC) listed specifically the freedoms of navigation, fishing, laying of submarine cables and pipelines and of over-flight as examples established in customary international law (UNCLOS I 1958). The only restriction was that states should exercise these freedoms with "reasonable regard to the interests of other states in their exercise of the freedom of the high seas" (ibid., art. 2). The freedom of the high seas allowed fishing fleets from anywhere in the world to fish as much as they wished off the coast of any state beyond the territorial sea of that state.

For the most part there was no specific codification of this body of customary law. From the latter part of the nineteenth century, non-governmental legal associations, most prominently the International Law Association, attempted to codify the law of the sea (Churchill and Lowe 1992, p11f). The League of Nations, in consultation with member states, attempted a similar exercise which culminated in a conference in 1930, which failed to adopt a convention on the territorial sea, the breadth of which had become a contentious issue.

The first United Nations Conference on the Law of the Sea (UNCLOS I) took place in 1958. The groundwork for this Conference was a report by the International Law Commission, produced at the

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[16] Chapter 7, section 1.1.3, discusses the mid-water trawl in greater detail.

request of the UN General Assembly. The Conference adopted four conventions: the Convention on the High Seas; the Convention on the Continental Shelf; the Convention on the Territorial Sea and the Contiguous Zone; and the Convention on Fishing and Conservation of the Living Resources of the High Seas. As was the case with the 1930 Conference, the first United Nations Conference on the Law of the Sea also failed to agree on the breadth of the territorial sea (ibid.).

Thus the second UN Conference on the Law of the Sea (UNCLOS II) was convened in 1960 to discuss the breadth of the territorial sea and that of a proposed fishing zone. This Conference too ended in failure (ibid.).

The third UN Conference on the Law of the Sea was called to agree on a comprehensive convention on the law of the sea. It took place on a different basis to those which had preceded it. It was seen as primarily a political exercise, as opposed to a narrowly legal one. Several factors had converged. A number of states, particularly in Africa, had become independent and joined the United Nations Organisation. There was growing realisation of the extent of mineral wealth on the sea bed and a belief that the technology was becoming available to commercially exploit these deposits. There was a desire by developing states to secure a fair share of this wealth. Over-fishing and the collapse of fish stocks was also of concern, as was the activity of the distant water fleets of a relatively small number of wealthy states. The climate of the 'new international economic order' and the concept of 'the common heritage of mankind', also contributed to a momentum that was building up.

Preparatory work for the proposed Conference was undertaken by the First (political and security) Committee of the UN General Assembly rather than the Sixth (legal) Committee. The rules of procedure adopted for the Conference after it started in late 1973 included consensus as the basis for arriving at decisions (UNCLOS III 1972). This time about 150 states took part, each with its own position to defend, many more than at UNCLOS I and UNCLOS II. This made negotiations very difficult at first, but there then emerged a number of loose groupings of states between which negotiations took place. The most prominent was the Group of 77, a group of developing states, a grouping of East European states and the group of Western capitalist states. There were in addition special interest groups that cut across these blocks, such as the archipelagic and straits states.

The literature on negotiated solutions to common pool resource problems, which generally focuses on small CPRs, identifies a large number of heterogeneous players as not being conducive to reaching

an agreed solution (Libecap 1994, p684). This was the case at the beginning of the negotiation but through the formation of groups, negotiation actually took place between a relatively small number of players.

The Convention elaborates a comprehensive regime for the Law of the Sea, incorporating previous conventions and codifies customary international law. It comprises 320 articles and 9 annexes covering all aspects of ocean space from delimitation to environmental control, scientific research, fishing and other economic and commercial activities, technology and the settlement of disputes relating to ocean matters. The negotiation of the Convention was seen as a negotiating triumph for the Group of 77 which, as Churchill put it, left "its imprint clearly upon the Convention text" (Churchill and Lowe 1992, p15).

2. Implications of international law of the sea for Namibia's fisheries

The fisheries regime for Namibia has developed within the framework offered by the international law of the sea and, in particular, the United Nations Convention on the Law of the Sea (1982) and it is reflected in the constitutional, legislative and judicial development of marine law applicable to fisheries in Namibia.

2.1 The Application of the United Nations Convention on the Law of the Sea to Namibia's fisheries.

The United Nations Convention on the Law of the Sea entered into force on the 16 November 1994 following the sixtieth ratification of the Convention on the 16 November 1993. Explicit provision was made in the LOSC for the United Nations Council for Namibia, as the legitimate authority for the country, to sign and ratify the Convention on behalf of Namibia (Article 305, 1(b), Article 306). It did so on the day it was opened for signature and ratified it on the 18 April 1983, the fifth country to do so (UN 1994). The signing and ratification on behalf of Namibia by the UN Council for Namibia are legally binding on Namibia and now form part of the law of Namibia (Namibia 1990a, Article 143).

The LOSC has formed the basis for establishing the fisheries regime for Namibia in two ways. Firstly, many states declared their own EEZs in the early years of the UNCLOS III negotiation

(Anand 1980, p47f) and did so largely in accordance with the emerging provisions of the draft convention. Thus it is widely accepted that the Convention is declaratory of much of what was already customary international law established through state practice and incorporates provisions of earlier maritime conventions (Churchill and Lowe 1992). Namibia's declaration of an EEZ (Namibia 1990b) was valid in terms of customary international law, preceding as it did the entry into force of the LOSC (GRN 1990) and consistent with the LOSC. Secondly, in the case of Namibia, the municipal fisheries law has been explicitly formulated with the intention of it being consistent with the LOSC, although in practice, in some minor respects, this is not always the case.

As the objective of this chapter is to demonstrate how international law sets a framework within which a coastal state, in this case Namibia, must manage its fisheries, much of the detail of the application of the LOSC to Namibia's waters will not be discussed. Thus provisions relating to "internal waters" on the landward side of the baseline from which the marine zones are measured, such as bays and harbours, will not be considered. Neither will the contiguous zone, the 24 nm zone measured from the baseline (Namibia, 1991c, s1; UN-LOSC 1982, Article33(2)) in which coastal states enjoy certain extra limited powers of enforcement of customs, fiscal, sanitary and immigration laws, be discussed. Their significance for the management of Namibia's fisheries is limited. One point should be noted, however: in the original Act (Namibia 1990b) the contiguous zone was defined as measuring 200nm from the baseline. This was amended to 24nm to make it consistent with the LOSC (Namibia 1991c).

The continental shelf provisions are also not significant for Namibia's fisheries as there are no known deep sea sedentary species for which the provisions could be significant.

It should be noted that Namibia decided, with adoption of its Constitution on the 9 February 1990, that laws in force in Namibia at the time of independence on 21 March 1990 would remain valid providing that they did not conflict with the Constitution or until they were repealed or modified (Namibia 1990a).

2.1.1 The Territorial Sea:

The territorial sea forms part of a state's territory (UN-LOSC 1982, Art. 2) subject only to the right of innocent passage for foreign vessels (ibid., Art. 17-32). Thus a state enjoys exclusive access to

fish stocks found within its territorial sea (Churchill and Lowe 1992, p227). Every coastal state has a right to establish a territorial sea not exceeding 12 nm. (UN-LOSC 1982, Art. 3).

A complication, now resolved , arose out of the claim by the Republic of South Africa to the Walvis Bay enclave, the off-shore islands, commonly referred to as the Penguin Islands, and to the northern bank of the Orange River as the northern border of the Cape province. In contrast, the Namibian Constitution describes the territory of Namibia as

> "...including the enclave, harbour and port of Walvis Bay, as well as the off-shore islands of Namibia and its southern Boundary shall extend to the middle of the Orange river." (Namibia 1990a, Art. 1(4))

As a result of the South African claim and, as such territorial claims also gave rise to marine zones, the regime existing at independence proved complicated. For the zones relating to undisputed Namibian territory, the South African Territorial Waters Act of 1963 (South Africa 1963), provided, inter alia, for a territorial sea, referred to in the legislation as territorial waters, of 6 nm. and a fishing zone of 12 nm.. This legislation had applied to both Namibia and South Africa; however, the South African authorities changed the size of the South African marine zones, including those it claimed off the Namibian coast, through the Territorial Waters Amendment Act (South Africa 1977). Zones arising out of South Africa's claims to Walvis Bay and the offshore islands thus had a 12 nm territorial sea and a fishing zone of 200 nm while the rest of Namibia's coast had a 6 nm territorial sea and 12 nm fishing zone. Figure 4 graphically depicts the position.

These disputes were settled when South Africa, in the first instance, conceded in 1992 the middle of the Orange River and not the northern bank as the border, so that the starting point of the maritime boundary to the south moved to the middle of the one mile wide mouth of the Orange River instead of its northern bank. The Walvis Bay enclave and off-shore islands were formally handed over by South Africa to Namibia at mid-night on the 28 February/1 March 1994 (Simon 1996).

The Territorial Sea and Exclusive Economic Zone of Namibia Act (Namibia 1990b) created a 12 nm. territorial sea and a 200 nm exclusive economic zone, consistent with the provisions of the LOSC.

The practical effect that the South African claims had were to inhibit the effective policing of the Namibian fisheries, as Walvis Bay is Namibia's only deep water port and also is the larger of its two

fishing ports. Considerable problems were experienced in exercising jurisdiction as the Namibian Government wished to avoid making arrests for violations of fisheries laws and regulations in the Walvis Bay enclave, as it did not wish to antagonise the South African authorities pending the outcome of the negotiations over the future of the port and islands.

The lack of legal clarity inhibited early action being taken by the Namibian authorities against some 40 foreign vessels at the time which continued to fish in spite of the moratorium imposed on fishing by foreign vessels within the EEZ. When arrests were made the vessels had to be escorted to the port of Lüderitz in the south.

2.1.2 The Exclusive Economic Zone:

The establishment of exclusive economic zones (EEZs) has been the most fundamental change in the global fisheries regime since the doctrine of the "freedom of the high seas" was established in international law in the seventeenth century.

2.1.2.1 Law of the Sea provisions on the EEZ

The Exclusive Economic Zone "is an area beyond and adjacent to the territorial sea" (UN-LOSC, Art.55) which "shall not extend beyond 200 nautical miles from the baseline from which the breadth of the territorial sea is measured" (ibid., Art.57). Within this zone the coastal state has

> "sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living..." (ibid., Art. 56)

Reference is frequently made in the literature to the Exclusive Fisheries Zones (EFZ) as well as to the EEZ. Several states declared EFZs in the immediate post war period, particularly in Latin America. Following the failure of the first and second UN Conferences on the Law of the Sea in 1958 and 1960 to resolve the growing conflict over fisheries, more than forty states declared EFZ between 1958 and 1973 when negotiations began on the 1982 LOSC (Churchill and Lowe 1992; Bernaerts 1988). Some states retain an EFZ, arguing that between the EFZ and the continental shelf provisions of the Law of the Sea Convention, they have jurisdiction no less than they would have than if they proclaimed an EEZ. The right to an EFZ is consistent with the provisions of EEZ regime.

The LOSC establishes rights and duties for coastal states in both the conservation and utilisation of marine fisheries resources.

Article 61 of the LOSC permits the coastal state to determine the total allowable catch for each species within its EEZ (Art.61 (1)) on the basis of the best scientific evidence available to it (Art.61 (2)). Coastal states have a duty to maintain and restore stocks (Art 61 (3)) and must take into consideration the interdependence of species within an ecosystem (Art.61(4)). Available scientific information and other data relevant to the conservation of fish stocks should be contributed and exchanged between states through competent international organisations (Art.61(5)).

Where the same stocks or stocks of associated species occur within the EEZ of more than one state (trans-boundary stocks), "these States shall seek....to agree upon the measures necessary to co-ordinate and ensure the conservation and development of such stocks..." (Art.63(1)). Similarly, where such stocks occur both within the EEZ and "in an area beyond and adjacent to the zone" (straddling stocks), the coastal state and the states fishing for such stocks in the adjacent area "shall seek....to agree upon the measures necessary for the conservation of these stocks in the adjacent area" (Art.63(2)). Co-operative arrangements for straddling stocks have not worked well primarily because of the absence of jurisdiction, except through the flag state of the vessels involved. The coastal state thus does not have complete jurisdiction over a straddling stock that it is attempting to manage within its own EEZ. Rules relating to straddling stocks and highly migratory species were agreed at UN Conference on Straddling Stocks and Highly Migratory Species and will be further discussed in 3.2.1 below.

Namibia has transboundary stocks occurring in the Benguela ecosystem which it shares with South Africa and Angola. Details of their occurrence were discussed in Chapter 2. The deep sea species, orange roughy and alfonsino, which live on the continental slope are thought to be straddling stocks occurring beyond Namibia's EEZ.

There are particular provisions relating to highly migratory species. The coastal state and other states which harvest highly migratory species listed in Annex 1 of the Convention "shall co-operate... with a view to ensuring conservation and promoting the objective of optimum utilisation ... both within and beyond the EEZ" (UN-LOSC 1982, Art.64). Namibia has species which fall within this category, the commercially most important of which are several species of tuna.

LOSC provisions relating to marine mammals, anadromous and catadromous stocks and sedentary species will not be discussed in this thesis as these categories of marine life are not particularly significant in the Namibian fisheries sector.

A coastal state must promote the optimum utilisation of its fisheries resources within its EEZ without prejudice to conservation (Art. 62). It must determine its capacity to harvest its total allowable catch and grant access to other states to that part of its TAC which it is not able to harvest (Art. 62 (2)). In allowing access to such a surplus, a coastal state must particularly take into account developing, landlocked and geographically disadvantaged states and must consider the position of states whose nationals have "habitually" fished within its EEZ (see Art. 62 (3); Arts. 69 - 72). The coastal state has the right to determine the conditions under which foreign vessels are allowed access to the surplus of the TAC and has full regulatory powers (Art. 62 (4)) within its EEZ.

In the exercise of its sovereign rights over the living resources of its EEZ, a coastal state may

> "take such measures, including boarding, inspection, arrest and judicial proceedings, as may be necessary to ensure compliance with the laws and regulations adopted by it in conformity with this Convention" (Art. 73 (1)).

Arrested foreign vessels and their crews must be released upon the payment of "a reasonable bond or other security" (Art. 73 (2)). Penalties imposed for violations of fisheries regulations and laws may in general not include imprisonment (Art. 73 (3)).

2.1.2.2 Establishment of Namibia's EEZ:

The Territorial Sea and Exclusive Economic Zone of Namibia Act of 1990, gazetted on 11 June 1990, established a 200 nm. exclusive economic zone (Namibia 1990b). While the landward and outer limits of the zone are not disputed, being the seaward boundary of the territorial sea and the line drawn 200 nm. from the baseline respectively, the southern and northern EEZ borders needed to be subjected to judicial scrutiny. Following dispute in the courts in 1991 (S v Piheiro, August 1991), the Sea Fisheries Act 29 of 1992 authorised the President to determine the southern and northern limits of the territorial sea and the EEZ by Proclamation in the Gazette but subject to determination of these maritime borders by agreement with the relevant neighbouring states (Namibia 1992a). The President-in-Cabinet issued a Proclamation on 17 December 1992 determining the northern limit of

the Territorial Sea and the EEZ as the parallel latitude 17°14'41 south running 200nm out to sea from the mouth of the Kunene River (Namibia 1992b).

The southern South African-Namibian maritime border is not disputed but could be subject to renegotiation.

2.1.3 High Seas Fisheries:

Fishing on the high seas is undertaken on the basis of open access to all except for the restrictions arising out of the rules for particular species mentioned above (Art 87 and 116) and for sedentary species in instances where the continental shelf extends beyond the 200nm EEZ (Art. 77). In addition, the LOSC lays down a duty on states to co-operate in the management and conservation of high seas fishery resources (Art 117 - 120). The agreement on straddling fish stocks and highly migratory fish stocks (2.2.1 below) seeks to strengthen these provisions which had proved ineffectual in preventing damaging fishing practices on the high seas.

2.2 Other related provisions of international law

2.2.1 Agreement for the implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks (UN 1995) [17]

The provisions of this agreement are important for Namibia because Namibia initiated negotiations in 1996 to establish a regional organisation under this agreement for the management of deep sea stocks found beyond Namibia's maritime borders.

The Straddling and Highly Migratory Fish Stocks Agreement is a 40 page document containing fifty articles and two annexes. It seeks to address a weakness existing in the Law of the Sea Convention relating to these stocks. The term 'straddling stocks' is not explicitly used in LOSC but it refers to "where the same stock or stocks of associated species occur both within the exclusive economic zone

[17] Reference will be made to the Straddling and Highly Migratory Fish Stocks Agreement or the Agreement.

and in an area beyond and adjacent to the zone" (Art. 63(2)). The LOSC provisions relating to the conservation and management of the living resources of the high seas are contained, *inter alia*, in Part VII, Section 2, Art. 116-20 and in Articles 63 and 64. Annex I of the Convention lists 17 highly migratory species to which the provisions apply, including albacore and bigeye tuna found in Namibian waters.

These articles of the LOSC declare a right for the nationals of all states to fish on the high seas but establish a general obligation on all state to co-operate in the conservation and management of the living resource of the high seas. All states, either individually or in co-operation with other states, have a duty to ensure that their nationals comply with conservation measures (Art.117). States whose nationals exploit identical living resources or different living resources in the same area have an obligation to enter into negotiations on necessary measures for conservation of the living resources concerned (Art.118). These articles go no further than place an undefined obligation on states utilising these stocks to co-ordinate and co-operate in their conservation and management. This weakness, in the first instance, arises from the lack of jurisdiction on the high seas except through the jurisdiction of a state over ships flying its flag (UN-LOSC 1982 Art. 90-98).

The catch from the high seas is about 10% of the total catch but has been rising due to the relative lack of regulation and enforcement (FAO 1992). In essence, open access still prevails. There had been increasing conflict between coastal states and distant water fleets, the most prominently reported in recent years being between Canada and the EU (Spain) in the north west Atlantic which culminated in the controversial arrest by Canada of the Spanish vessel, the *Estai*, on the high seas in 1995 (Smith 1995).

The Agreement provides for the establishment of regional or sub-regional management organisations (Part III). States with a "real interest in the fisheries concerned may become members of such organisations" (Art. 8(3)) and only states which agree to apply the management measures can have access (8(4) to the fisheries. They need not be members of the organisation. A state which does not agree to apply the management measures "is not discharged from the obligation to co-operate, in accordance with the Convention and this Agreement, in the conservation and management" of the relevant fish stocks (17 (1)).

The Agreement sets out comprehensive areas in which such a management organisation will have competence covering scientific research, stock assessment, monitoring, surveillance, control and enforcement (Art. 10). The organisation can limit participation by new entrants according a set of criteria listed in Art. 11 although Art. 17(4) leaves it unclear what effective measures can be taken in the event of non-compliance by appropriators not party to the Agreement.

Compliance with the Agreement builds on flag state jurisdiction contained in LOSC Art. 90-98. A state may authorise a vessel flying its flag to fish on the high seas only where it is able to exercise effectively its responsibilities of enforcement under the Agreement (Art. 18(2)). However, provision is made for the flag state to permit access by inspectors from other states (Art. 18(3)(g)(i)) and the use of onboard observers from other states ((Art. 18(3)(g)(ii)).

Vessels used for inspection and enforcement must be clearly marked and identifiable as being on government service (Art.21(4)). Article 21 further provides for inspectors from a member state of a regional organisation established under the Agreement to board and inspect any vessel of another state party to the Agreement. The flag state must take action against a vessel reported to have committed a serious violation, detailed in Article 21 (11). Failure to do so gives the inspecting state the right to take action and the procedures for doing so are detailed in Article 22.

Finally the Agreement requires that the precautionary approach be widely applied in managing stocks under this agreement (Art.6).

Namibia has proposed to three other states the establishment of a regional management organisation in terms of the Agreement to manage the exploitation of orange roughy and other deep sea species.

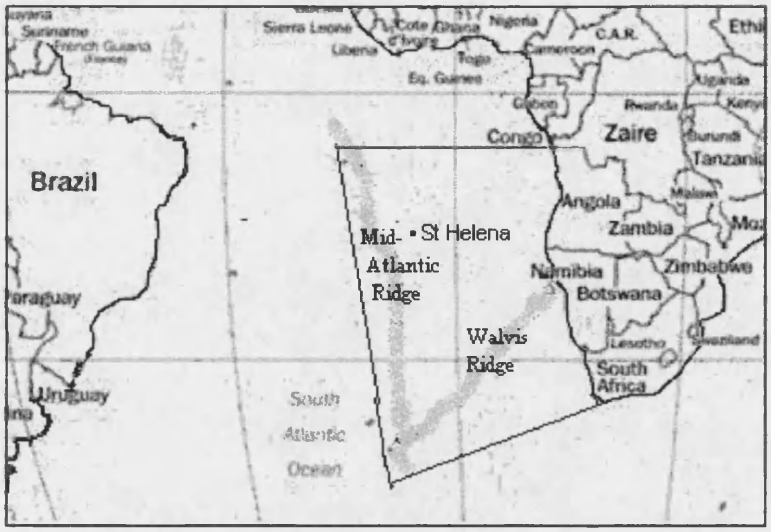

Figure 17: Map of south Atlantic indicating the Walvis Ridge and mid-Atlantic Ridge and a possible delimitation of the block intended for management by the regional management organisation. (source: adapted from Atlas of World, NATO web site: http://cliffe.nose.mil/~NATLAS/atlas/world.jpg18)

The area of sea being proposed for management by the regional organisation incorporates the high seas beyond the EEZs of Angola, Namibia and South Africa extending westward to a longitude to the west of the Mid-Atlantic Ridge in the middle of the south Atlantic (Figure 17). It is proposed that the three countries above and Britain together form the regional management organisation; Britain would participate because of its possession of St. Helena on the Mid-Atlantic Ridge. The purpose would be to establish a management regime for the orange roughy and other species along the Mid-Atlantic Ridge and the Walvis Ridge which runs in a south westerly direction from the northern Namibian continental shelf to the Mid-Atlantic Ridge.

Little is know of the biological characteristics of these stocks and any possible migration patterns they may have. As the precautionary principle is a fundamental principle of the Agreement, the possibility that these stocks are straddling stocks is being assumed enabling the use of the Agreement to establish control over the harvesting of these stocks. It might well be that this application of the Agreement is challenged as it would appear to be stretching the limits, to a certain extent, of what was intended.

Here we witness again the use of the framework created by the international law of the sea to resolve a regional fisheries problem as these valuable stocks would soon otherwise be fished on an open access basis with all the consequences that flow from that scenario. We witness the incremental development of an international system of governance for fisheries and a parallel development of Namibia's fisheries institutions utilising the opportunities these developments create.

2.2.2 Code of Conduct for Responsible Fishing and The Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas

The Code of Conduct for Responsible Fishing was adopted by the 28th Session of the FAO Conference on 31 October 1995. The Twenty Seventh Session of the Conference had two years earlier (24 November 1993) adopted the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Resolution 15/93) which declared that it "will form an integral part of the International Code of Conduct for Responsible Fishing" (Preamble).

The Code of Conduct *inter alia* spells out flag state responsibilities for the activities of fishing vessels flying its flag and seeks to advance management measures, by agreement among states, that improve the optimal and sustainable use of fisheries resources. The Compliance Agreement similarly builds on flag state responsibility for fishing vessels flying its flag (Art. III) and operating on the high seas.

These agreements amount to an international consensus developing on the basic rules between states over how to make the management of fisheries, both within national jurisdiction and on the high seas, more effective. It emphasises the extent to which an evolving, dynamic global institution governing global fisheries has emerged with which national fisheries management must be consistent.

2.3 Who owns Namibia's fish?

Article 100 of the Constitution states that

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18 Demarcation is not official proposal, but author's interpretation of verbal description of the proposed area by MFMR official.

> "Land, water and natural resources below and above the surface of the land and in the continental shelf and within the territorial waters and the Exclusive Economic Zone of Namibia *shall belong to the state* where it is not otherwise lawfully owned" (Namibia, 1990a, Art. 100; author's emphasis).

This article claims ownership by the Namibian State, *inter alia*, of the natural resources of the territorial sea and the EEZ, which includes fish stocks. The article also explicitly provides for existing rights of ownership being respected. The question arises as to whether these claims of ownership are compatible with international law.

The LOSC grants the coastal state "sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources....of the seabed and its subsoil" (UN-LOSC 1982, Article 56, (1)(a)) within its EEZ. In addition to the "sovereign rights" referred to in Article 56 1(a) which the coastal state enjoys within its EEZ, it also has jurisdiction over installations, marine scientific research, protection of the marine environment and certain other rights (Art. 56, 1(b)(c)).

The LOSC thus grants to coastal states natural resource rights and rights over some particular activities within the EEZ. It would seem doubtful that the Convention intended to grant rights to the coastal state more comprehensive than those explicitly stated in Article 56, (1)(a),(b). The concept of the EEZ entails that certain rights may be claimed by coastal states in that area of what were the high seas adjacent to their coasts. But equally, other states have substantial rights within the EEZ of the coastal state, the principal ones being the laying of submarine cables and pipelines, navigation and overflight (Art.58), for which the coastal state must have "due regard" (Article 56(2)).

Attard argues that the coastal state "does not enjoy exclusivity with regard to the exploitation of living resources" within the EEZ (Attard p48). Other states have the right to participate in the harvest of any part of the TAC set by the coastal state for which the coastal state does not itself have the capacity to harvest (UN-LOSC 1982 Article 62(2)).

The rights gained by the coastal state were essentially a derogation from the regime of the high seas and it was clearly not the intention of the drafters of the Convention to grant rights of ownership as such to the waters and natural resources of the EEZ. Namibia's claim in Article 100 of the Constitution to ownership of the waters and natural resources of the EEZ goes beyond what is consistent with international law.

In contrast to the extensive but limited natural resource rights and jurisdiction over certain activities enjoyed by the coastal state within its EEZ, "the sovereignty of a coastal State extends beyond its land territory and internal waters...to...the territorial sea" (Art. 2).

The Convention thus draws a clear distinction between the sovereignty of the coastal state over its territorial sea and the sovereign rights within the EEZ. The claim to ownership of "land, water and natural resources...within the territorial waters" should be examined against the concept that the territorial sea is part of a state's territory just as is its land territory. This is subject to the right of innocent passage (Article 17) for the vessels of foreign states. The claim in Article 100 of the Constitution to ownership of the land, water and natural resources of the territorial sea would generally appear to be consistent with international law (Devine 1990/91, p114).

A difficulty specifically in relation to fish arises, however, with the concept of ownership. There has been a long standing debate over whether fish are *res nullius* (belonging to nobody) or *res communis*[19]. From the development of the law of the sea in the seventeenth century, the commonly held legal view appears to be that fish are *res nullius* and become owned by '*occupatio*' or the law of capture (ibid., p113). Title to the fish is established when it is captured. The legal question relating to ownership of fish applies also stocks within the EEZ.

It should also be said that if Article 100 of the Constitution were to be made consistent with the LOSC, it would not diminish Namibia's control and usage of the natural resources of the EEZ. The sovereign right which a coastal state enjoys over the natural resources within the EEZ are so comprehensive that Namibia's control over them would not be diminished by such a change.

Although Article 100 of the Constitution is inconsistent with the international law of the sea, it would seem that the intention of the Namibian Government was that there should not be any conflict between Namibia's municipal law and international law (Akwenda 1995).

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[19] For a fuller discussion see O'Connell 1982, pp792-796.

3. Global governance and the state

Prior to the 1970s there existed a regime governing ocean space which had become inadequate for the second half of the 20th century. This was true of fishing and of the anticipated development of ocean floor mining and other non-fishing uses of the sea. There was growing conflict between states relating to fishing by distant water fleets of a few rich maritime powers which were harvesting about half of the world catch (Anand 1980, p39). Tension and conflict was on the increase with violence being used against fishing vessels such as in the "cod war" between Britain and Iceland, the "lobster war" between France and Brazil and the "tuna war" between the United States and Ecuador (ibid., p18). There was growing alarm over the depletion of certain stocks as a result of overfishing. The conflict over the marine commons needed to be resolved by agreement between states and it became apparent that a negotiated set of rules held out the prospect of a Pareto type improvement in the use of this global commons (Bernaerts 1988, p2-7)

The LOSC and other related agreements establish a global regime for the governance of fisheries where governance may be defined as the "capacity to get things done without the legal competence to command that they be done" (Ernst-Otto Czempiel, 1992, p250). It is a form of authority without necessarily jurisdiction. Governance at the global level is as likely to rest with management at a regional, national or local level and is not necessarily confined to the national level of government.

It thus creates a framework within which the nation state must operate. The set of rules agreed between states to govern the usage of the commons by the state also establishes a framework within which, at a national level, fisheries resources must be managed. The state, or the "aggregate of individuals dominated by an apparatus which exercises authority over them", as Antonio Cassese defined it (Cassese 1986, p9), is thus itself a nested institution in a global system of governance.

In the modern system of states, lack of world government means that states need to establish ways of co-operating with one another and to implement agreements based on reciprocity rather than hierarchy. There are many examples of 'international regimes', defined as 'implicit or explicit principles, norms, rules, and decision-making procedures around which actor expectations converge in a given area of international relations' (Krasner 1983, p2). Anne-Marie Burley, arguing for a dual agenda for international legal studies and international relations, suggests that this definition of international regimes is "international law by another name" (Burley 1993, p206). Such

international regimes tend to be characterised by an absence of hierarchies or centralised enforcement and by the reduction of transaction costs and by provision of information that facilitates co-operation (Keohane, 1984). An underlying theme of the LOSC is co-operation, the negotiation of solutions to conflicts, arbitration and the sharing of information between states that facilitates greater conservation and optimisation of the use of fisheries resources.

There appears to be a parallel between aspects of the type of solution negotiated at a global level resulting in the LOSC and other related agreements discussed above on the one hand, and the resolution of CPR problems at a local level on the other. When individuals or states, Cassese's 'aggregates of individuals', are able to make credible commitments they are frequently able to create institutions or sets of rules which change the incentive structure to produce improved outcomes.

At a local level collective action to resolve local CPR problems results in institutions and, if necessary, organisations to facilitate management; similarly collective action at a global level can result in global institutions and the establishment of organisations (Law of the Sea Tribunal) or utilisation of existing ones (FAO) to facilitate management.

The central point is that, even without coercion and the requirement of central enforcement, rules and decision making procedures can be used to structure the management of both local CPRs and the global commons. Rules and procedures, institutions in short, provide focal points for crystallising and stabilising expectations in both instances. This poses the question of how management can best be implemented at a national level.

4. Conclusion

The state forms a crucial link between management of fisheries resources within a country's borders and governance of this common pool resource at a global level. The Namibian state, through consciously creating its municipal law to be consistent with international law relating to fisheries, has confirmed its commitment to participate in the international regime, widely regarded as an essential element in resolving the problems of the global fisheries commons.

While it may well be, at some future time, that human society evolves a different structure to that of the nation state and the institutions that facilitate collective action by nation states, there is no indication that such a change is about to happen. The state carries a responsibility to act on behalf of

the people of the country in instituting and executing collective action by states to optimise the utilisation of the global common pool fisheries. Without these arrangements, management of fisheries at a national level would not be possible.

Chapter Six

THE POST-COLONIAL STATE: POLICIES, STRUCTURES AND PRACTICE

The new fisheries regime established in Namibia following independence, and the adequacy of the Namibian state to deliver results through the associated management system, are examined below, prior to analysis in the following chapters of the new regime's performance in meeting the constitutionally based objectives established by the post independence Namibian Government. This chapter will examine the policy objectives referred to briefly in Chapter 1 and the targets arising from these objectives which the Ministry of Fisheries and Marine Resources set itself. This will be followed by an examination of the new system and the demands that it makes on the state to deliver results.

1. Objectives of government policy for the fisheries sector

The objectives of government policy for the fisheries sector are based on the constitutional provision which is expanded upon in a number of places.

The Namibian Constitution *inter alia* requires of the State

> " that ecosystems, essential ecological processes and biological diversity are maintained and living natural resources are utilised on a sustainable basis for the benefit of Namibians, both present and future..."(Namibia 1990, Art.95 (l)).

This article places a constitutional obligation on the Government to ensure the utilisation of Namibia's marine fisheries resources on a sustainable basis and to do so for the benefit of Namibians.

A white paper, entitled "Towards the Responsible Development of the Fisheries Sector" (Namibia 1991a), articulates the policy for the development of the fisheries sector reflecting this constitutional requirement. Two overwhelmingly significant objectives become apparent. The first is to address effectively the serious depletion of several species which took place prior to independence and to rebuild the stocks "to their level of full potential" (sic) (ibid., p42).

The second is that the policy aims to maximise benefits for Namibians from this sector both in the harvesting of fish and in the processing industry. The policy aims to encourage more employment of Namibians in both the fishing and processing industries and through the development of support and service industries such as boat building and fishing gear production and repairs, can making, production of other inputs for the processing industries and the development of distribution and marketing networks (ibid., p42).

The policy would aim to increase the contribution of fisheries to national income by creating a Namibian based fishing industry through the reinvestment of surpluses within Namibia. Export earnings would be raised by encouraging the export of value added fish products and through the development of new markets. A further objective is to improve nutrition and food security through increasing the supply and promoting the consumption of fish in Namibia and in neighbouring states (ibid., p43).

The white paper identifies a responsibility of the Government as "constantly assessing the social impact of resource exploitation, such as equity" (Ibid., p49).

The Transitional National Development Plan for the period 1991-94 specifically identifies objectives for the fishing industry as reviving and sustaining economic growth, creating employment opportunities, alleviating poverty and reducing inequalities in income (MFMR 1995a).

2. Targets for the fisheries sector

The MFMR in 1992 established nine targets reflecting Government policy objectives for the sector (ibid., p12). These can be grouped to reflect the ecosystem objectives and the socio-economic objectives of the Government's policy.

2.1 The ecosystem targets are:

- to rebuild the depleted stocks to full potential, specifically "hake and other demersal species, pilchard and lobster" (ibid., p12), all of which were considered depleted in 1992.
- to ensure that rebuilt stocks are maintained at a biomass level "that can support maximum sustainable yields".

- to establish a biodiversity baseline for both marine and freshwater species in Namibia, monitor changes in species composition with the objective of ensuring that no species present in Namibian waters should become endangered.

2.2 The socio-economic targets are:

- that fishing and fish processing should contribute 13% of GDP at factor cost by the year 2000, increasing the contribution of fisheries from a 1992 level of 3.3%. A preliminary estimate indicates that fisheries contributed 7.6% to GDP in 1994 (ibid.).

- to treble the value of fish exports, which stood at US$178 million in 1992 to about US$535 million by the year 2000. The value of fish exports reached US$360 million in 1994 (EIU 1996) which is 27% of the value of total exports.

- to double the contribution to state revenue of quota fees and related charges from the 1992 estimate of US$20.2 million to about US$41 million. The quota levy, the research levy and licence fees contributed US$30 million in 1993 but this dropped due to the decrease in catch to US$27 million in 1994 (MFMR, 1995a).

- to increase Namibian ownership with a more specific target to be set in 1994. In the event, no target was set "because it was believed that appropriate measures for Namibianisation could not be developed at the time"(ibid., p12).

- to increase employment in onshore processing with the objective of having 15 000 people employed in the sector by the year 2000. By 1993 employment had more than doubled in the sector since 1991, rising to 11 500 employed with the projection that, by the year 2000, the number employed would reach 20 000 (ibid.).

- aim at having Namibians fill 95% of posts for seagoing certified personnel by the year 2004. To this end a training programme for skippers and engineers has been established.

This set of targets at first sight appears to be very ambitious, but given the potential of the resource in relation to the size of Namibia's population of 1.5 million people and the size of the economy, it is not unrealistic in the longer term. It should be noted that the total catch in Namibian waters in 1994

of 639 000 tonnes is still well below the pre-independence estimated total catch for 1989 of 1.3 million tonnes from what are now Namibian waters (Namibia 1991a, p58-65).

3. Early state action to establish a new regime

The Namibian state demonstrated its capacity to act in pursuit of its new, then evolving, policy from the time of independence. It demonstrated that it is not a 'soft state' in the Gunner Myrdal sense of being unwilling to coerce people in order to implement declared policy goals and thus revealing a gap between real and professed intentions (Myrdal 1968). The post-independence Namibian Government has moved systematically from the formulation of policy to the drafting of new legislation consistent with that policy and the establishment of a new regime.

The decisiveness with which the Namibian Government was able to act was illustrated in the arrest of Spanish vessels fishing illegally in Namibian waters in 1990 and 1991.

In December 1989 the annual meeting of ICSEAF was informed by the Namibian Government elect that an EEZ would be declared "upon the attainment of independence." (SWAPO 1989). In the event, due to the necessary legislative processes, the EEZ was formally declared only on 11 June 1990 (Namibia 1990b), three months after independence. However, some two weeks before independence, on the 8 March 1990, the Namibian President-elect wrote to the Executive Secretary of ICSEAF saying that the incoming government was deeply concerned about the condition of the marine resources off Namibia's coast and called for a moratorium on fishing by foreign vessels, requesting all vessels to withdraw from the waters off the Namibian coast. This was made public at the time of independence (Anon. 1990).

As far as could be ascertained, most foreign vessels left Namibian waters at about that time. However, when it became apparent that it might take some time to declare the EEZ, and that Namibia would not have the capacity to police it effectively once it was declared, an armada of large Spanish freezer trawlers returned to Namibian waters, ignoring first the moratorium and then the declaration of the EEZ. The vessels had their call signs, registration numbers and names painted out to avoid identification, although in most instances these were still discernible.

It was thus possible for the Namibian Foreign Ministry to call in the Spanish Ambassador to Namibia and protest at the illegal fishing by Spanish vessels and present him with a list of the names of 33 of the vessels which had been positively identified (MFA 1990).

The Namibian Government was acutely aware that large scale illegal fishing was taking place, but also of the limitations it faced in stopping it. Namibia has an EEZ of about 160 000 sq. nautical miles (about 500 000 sq. kilometres). At independence Namibia inherited one ageing patrol vessel, considerably slower than the modern freezer trawlers it was seeking to control. No suitable patrol aircraft were available to the fisheries authorities.

Public anger was mounting at the large scale of illegal fishing by Spanish vessels. There was an awareness that this fishing was undermining Namibia's policy of restoring fish stocks. More vessels would arrive if those already in Namibian waters were not challenged and were allowed to return to Spain with their valuable cargoes of hake.

The responsible Ministry[20] decided to act against the Spanish fleet, hired a spotter plane and a helicopter and began an operation before dawn on 24 November 1990 (Anon. 1990b; Jacobie 1990). In the course of the day fisheries inspectors, supported by the Namibian Defence Force, succeeded in arresting five of the vessels. The remainder pulled up their nets in alarm and left Namibian waters. The vessels were forced into port, the crews were repatriated, senior officers of the vessels charged with illegal fishing and the vessels and catches impounded, pending the due process of law (Anon. 1990c).

This incident and the arrest in March 1991 of three more Spanish freezer trawlers, which had again attempted to test the enforcement capacity of the Namibian state, brought to an end illegal fishing by unlicensed trawlers. From then on such activities ceased to be a major problem for the Namibian fisheries authorities.

The Namibian state, acting in conformity with the Law of the Sea Convention provisions (UN-LOSC, art. 73), successfully enforced the law despite lack of adequate resources. It did so successfully because of the co-operation between the industry, operating legally in Namibian waters,

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[20] The Ministry of Agriculture, Fisheries, Water and Rural Development. The Ministry of Fisheries and Marine Resources was established as a separate ministry on 18 February 1991 (Minney 1994).

and the Government in circumstances where one acting without the other would not have been effective (Ch. 3, 3.3.1).

4. The new fisheries regime

The transition to the new regime took place over the course of four years. The establishment of maritime zones and of enforcement over fisheries were put in place in 1990. The formulation of policy, culminating in a White Paper in 1991, the promulgation of the Sea Fisheries Act in 1992, the publication of the Sea Fisheries Regulations arising out of the Act in 1993 and finally, the end to the legal requirement to honour existing fishing rights at the end of 1993 were further steps in this process. The new regime could be said to have been substantially established by the beginning of 1994.

The new Sea Fisheries Act of 1992 repealed the Sea Fisheries Act (No. 58) of 1973 and replaced it in its entirety with new legislation (Namibia 1992a, Schedule). The new Act is comprehensive, has 12 parts, 44 sections and a schedule and takes up 57 pages of a Government Gazette. Section 32 of the Act provides for the Minister of Fisheries making regulations; these were gazetted on 4 January 1993, occupy 26 pages plus a further 30 pages of annexures (Namibia 1993) and need to be read with the Sea Fisheries Act.

The Act regulates the exploitation all fish, aquatic plants, shells and guano in the internal waters, territorial sea and exclusive economic zone (s3). It sets up a system whereby a potential appropriator of these resources needs first to be granted a 'right of exploitation' for the particular species. A total allowable catch (TAC) is set for the main commercially exploitable species. The TAC is divided into quotas which are granted to those who hold a right of exploitation. Vessels and other facilities in the industry must be licensed. The system applies to both Namibian and foreign interests. Fishing agreements and a system of permits provides an alternative route for foreign companies, according to the Act, although it is now unlikely that these provisions will be used in the foreseeable future (see section 4.5).

4.1 Right of exploitation:

The Sea Fisheries Act (1992) provides for the granting of 'rights of exploitation' to utilise living marine resources (s14). Any person wishing to exploit commercially any of the resources covered by the Act must first be granted a right of exploitation (s16). This is a prerequisite for both a licence to fish and a quota. These provisions of the 1992 Act were used to establish rights of exploitation which took effect from the beginning of 1994.

In a MFMR policy statement on the granting of rights of exploitation (MFMR 1993a), it was made clear that all existing rights, which were valid only until 31 December 1993, would expire on that date. All existing rights holders would need to apply for new rights of exploitation together with the new applicants. An exception was made for 9 rights holders who had been granted hake wet fish and horse mackerel rights two months earlier in May 1993. Their rights would be extended. Existing rights holders were those who had been granted rights in 1987 plus other newcomers to the industry who had been granted rights since independence.

Once the new rights became effective from 1 January 1994 it was not expected that any further rights would be granted for a period of four years[21] unless there was an unexpected change in the availability of fish, or a number of rights were terminated for any reason, or new fisheries developed, or there were major new proposals with outstanding benefits for Namibia or other similar factors (ibid., p2).

4.1.1 Applications for rights

All applications for the rights had to be delivered to the Ministry in sealed envelopes addressed to the Permanent Secretary of the Ministry in the form set out in Annexure A of the Sea Fisheries Regulations. All applications would remain sealed and in 'safe custody' until the end of the specified period during which applications could be made (Namibia 1993a, para. 6, 7).

The Sea Fisheries Regulations specifies the information required from the applicant, inter alia, technical details of the vessels and catching gear to be used, projected catches, details of the

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21 The Policy statement gives a period of five years (MFMR 1993a, para. 5), evidently in error, as this exceeds by one year the 4 year period for which some of the rights were granted.

ownership, control and operation of the enterprise, details of the arrangements for the processing and marketing of the fish and fish products and a financial analysis. It also requires a detailed description of how the right of exploitation will provide for broad and balanced participation of Namibians in the enterprise (MFMR 1993a).

There were further political objectives: The Minister may consider

> "the advancement of persons in Namibia who have been socially, economically or educationally disadvantaged by discriminatory laws or practices which have been enacted or practised before the independence of Namibia" and "regional development within Namibia" (ibid., 2(a), 2(b)).

The Minister "may have regard" as to whether the applicant is a Namibian citizen and whether beneficial control of the company is vested in Namibian citizens. The Minister may also consider the beneficial ownership of any vessel which will be used by the applicant and whether the applicant has the ability to exercise the right of exploitation in a satisfactory manner (s14(6)).

The Minister may require the applicant to give public notice of the application, inviting the public to submit in writing to the Permanent Secretary any objections or representations in connection with the application (s14(7)).

The Minister also has authority to extend or terminate a right of exploitation. If the holder of a right of exploitation is convicted of an offence under the Act or if the Minister considers the continued participation of the appropriator to be no longer in the interest of the industry or of the resource, the Minister may suspend or terminate the right of exploitation (s14(8)(b)).

A right of exploitation is not transferable except with the approval of the Minister (s14(10)). The Minister has complete discretion to grant a right of exploitation to the applicant or to refuse it or to make it subject to certain conditions (s14 (4)).

4.1.2 Period for which rights are valid

The Act grants to the Minister the right to set the period for which a right of exploitation will be valid (s14((8)). In the event the Ministry announced rights of exploitation for periods of ten, seven, and four years (MFMR 1993a, p3,4).

- The new rights granted for a 10 year period were to ventures which were at least 90% owned by Namibians with significant investment, defined as 50% or more, in vessels or on-shore processing facilities in the fishery for which the right was granted. Rights of ten years' duration could also be granted to Namibian applicants that may have a smaller share in a larger venture.

  Ventures with a controlling foreign ownership but which were judged to have the capacity to make a major contribution to the development of Namibia may be granted a right for a period of 10 years. The employment of more than 500 Namibians on-shore in activities related to the fishery for which the rights were sought, was regarded as sufficient for a "major contribution". Pescanova Fishing Industries of Namibia (Pty) Ltd, 100% owned by its Spanish parent company, Pescanova (SA), was granted a right of exploitation of ten years in the Namibian fisheries because of the size of its investment and the number of people it employs in Namibia (Clark 1994).

  Ten year rights could also be granted to companies with a minority Namibia ownership or even wholly foreign owned ventures which make an innovative contribution to the development of the fisheries sector such as developing new products or new export markets and where the Ministry judged a longer term right as necessary to secure the investment involved.

- seven year rights were granted to all other majority Namibian owned ventures which have at least 50% ownership in vessels or an operational onshore processing facility in the fishery for which the right was granted. Seven year rights were also to be granted to other ventures with less than 50% Namibian ownership but which had on-shore investments in the fishery.

- Finally rights with a duration of four years were granted to majority Namibian owned ventures which did not have at least 50% ownership in vessels or operational onshore processing facilities in the fishery for which rights were sought. This included ventures which only operate in the fishery by chartering vessels or through other similar arrangements. Ventures with less than 51% Namibian ownership, which did not have significant onshore investments in the fishery could also receive a four year right.

4.1.3 The new 1994 rights

A policy document on the granting of rights of exploitation was published in July 1993 and applications were invited for new rights of exploitation (MFMR 1993a). This was done through publication in the Government Gazette and through advertisements placed in newspapers by the Ministry and through information packs prepared by the Ministry. During the next three months the Ministry of Fisheries and Marine Resources received 565 applications for rights of exploitation from 316 applicants. These were assessed by a committee of Ministry officials and foreign consultants. Their recommendation as to who should receive rights of exploitation was then commented on by the Minister whose concern was that the proposed list, in one or two instances, did not give adequate regional spread to benefit from the resource (Clark 1996). This was a sensitive issue, as accusations of ethnic or political favouritism could readily be made. The revised proposal that 165 rights be granted to 124 enterprises was approved by the Minister. The practice is that for major decisions, such as this, the Cabinet's approval is sought by the Minster. The Cabinet endorsed the proposal of the Minister without amendment at its meeting on 13 October 1993 (ibid.) (MFMR 1990c).

The Act empowers the Minster to act with very wide discretionary powers, of which Devine is critical on the basis that it opens up potential for corrupt practice (Devine 1993). However, the Ministry argues that it is only in this way that it is able to fulfil the political objectives of the fisheries policy while at the same time attending to its environmental and economic obligations. Devine's criticisms of the system highlight the potential for rent-seeking behaviour discussed in chapter 3.

The MFMR sought the advice of the Attorney General's office on how to proceed with this matter. It thus published as fully as possible the criteria it would use in making decisions on the granting of rights of exploitation and laid itself open to legal challenge under administrative law by any unsuccessful applicant who was aggrieved and considered the Ministry to have been unfair. The MFMR was ready to defend its decision in court but, in the event, there was no challenge made to the Ministry's decision on granting rights of exploitation (Clark 1994).

The policy is clearly one of recognising the potential value of foreign investment if that investment is contributing to the development of Namibia and the employment of Namibians. The focus of the allocation is one of granting rights to a mix of established companies committed to developing

processing and value added activities in Namibia, to employment of Namibians and to encouraging Namibians to invest in and develop a Namibian owned fishing industry.

Of the rights approved, 85 were to companies which had entered the industry since independence in 1990 (MFMR, 1993b). Around 30 of the existing rights were not renewed. Overwhelmingly the companies had a majority Namibian ownership (Kankondi 1994). The inadequacy of ownership for purposes of distribution of benefit from the resource is discussed further in Chapter 8 on the ownership and control of the Namibian industry.

The rules were kept and the criteria applied[22]:

- There were 27 applications that were either late or where insufficient of the information required was submitted. These application were not considered in accordance with section 14(3) of the Sea Fisheries Act.

- Attention was given to the regional distribution of fishing rights so that weight was given to the applicants from regions which were considered under-represented in the pattern of existing allocations. This was done in the belief that these regions would gain economically from such allocations which is not necessarily the case. Applications from companies claiming a link to the Kunene, Kavango, Hardap and Karas regions, and from the Topnaar and San communities were granted rights.

- Applicants proposing diversifying operations away from Walvis Bay were considered more favourably, such as those that proposed operating out of Lüderitz, the southern port that was under-utilised and those that proposed processing at rural towns away from the coast such as Arandis, Karibib and Usakos, where employment opportunities were desperately needed.

- Applications from existing rights holders that did not fulfil key criteria were turned down: For example, in the hake fishery, Caroline (Pty) Ltd had been previously granted quota partly on the basis that it intended to develop onshore facilities in Lüderitz which it had failed to do while it had done so in South Africa. Sea Harvest (Pty) Ltd had also failed to make any investment in

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22 The following observations were made from scrutiny of applications by successful applicants and discussions in October 1994 with Ministry officials, L. Clark (1994) and other consultants involved in the exercise.

Namibia in either vessels or in onshore facilities and was consequently excluded from the allocation.

The available evidence suggests that the applications were fairly assessed and the published criteria were applied in making these decisions. Certain companies, such as Veritable Fishing, a company owned by the PLAN Veterans Trust, established to assist veterans of the People's Liberation Army of Namibia, SWAPO's pre-independence military wing, were granted a right of exploitation, as also were companies associated with opposition figures and with communities where opposition support is relatively strong.

The system may be criticised in that it opens up opportunities for rent seeking behaviour. However, if government were to achieve the objectives of spreading benefit to Namibians in this manner, it is difficult to see how else the allocation could better be done. It would not be possible to auction the rights as they would simply go to the best financed companies. Many of the new companies making applications had little or no finance available to them. The high stakes involved in securing a right of exploitation relates to the high potential rents available in the fisheries. If the system operated in such a way as to reduce the rent attached to holding a right by charging a higher royalty or levy, then the incentive towards rent-seeking behaviour would be reduced.

It should also be noted that the process of granting rights of exploitation is one which takes place only every few years. The fairness and openness with which the allocation of rights is made relates to the transparency of the process and the mix of individuals involved in making the decisions. The mix of local officials and of foreign consultants, with no long term local interests in the fisheries, probably contributed to minimising the possibilities for rent-seeking behaviour.

It had also been preceded in 1991/1992 by a judicial commission of enquiry in which fisheries officials were investigated and publicly questioned by the judge about allegations being made against them (O'Linn and Twohig 1992). This created a climate less tolerant of any irregular activity.

Government clearly does not regard rights of exploitation and the quotas as hand-outs for which the new-comer companies were not answerable. This was evident from a speech made by the Minister

of Fisheries and Marine Resources in 1993. Reviewing the results of a questionnaire sent out to existing rights holders he warned the 'newcomer'[23] companies that

> "I see there companies that say they can't pay their levies, but pay their managers higher salaries than the large companies. I see companies that say they can't make enough money to buy a vessel but buy luxury German cars with money that could have been used for the deposit on a vessel. I see there companies which demand concessions from the Ministry in the name of Namibianisation and affirmative action, and then operate chartered vessels with not one single Namibian in the crew. I am not saying that you should not be competitively paid nor buy the vehicles you need to operate your businesses, but if this is how you are going to operate, we can easily find capable newcomers to replace you." (Angula 1993, p10).

It will be argued in Chapter 7 that the rent associated with the rights and quotas that is not collected by government has the function of a subsidy. While accountability is evidently expected from companies in general terms, the system needs to be established in such a way that this form of subsidy be more explicitly recognised as a subsidy. There need to be more specific expectations in return for these subsidies, more specific accountability, as they are being granted from a publicly owned resource. The argument is presented in Chapter 7 for the collection of a greater proportion of the rent and the more explicit distribution of subsidies, where and when considered appropriate, with accountability being demanded for such disbursements.

4.2 The Total Allowable Catch:

The Sea Fisheries Act gives the Minister the power to determine the total allowable catch of particular species of fish (s15) following consultation with the Sea Fisheries Advisory Council discussed further below (section 4.7). Devine comments that the Council's advice does not bind the Minister and that the system, therefore, gives a free hand to the Minister to establish a TAC provided that he engages in the prescribed consultation procedure (Devine 1993).

The procedure followed in determining a TAC begins with recommendations made by the scientists working for the MFMR on the basis of data they have collected in the preceding period and their analysis of this data. Presentations are made to the Fisheries Advisory Council which then debates the issue and makes a recommendation to the Minister for a TAC for each of the relevant species.

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[23] This term, used in this text is commonly used in Namibia to refer to the companies which have been granted rights and quotas in the fisheries sector and which had not been in the industry before independence.

The Minister may then use his discretionary powers to determine TACs which are presented to the Cabinet for endorsement.

Towards the end of 1994 the problem was illustrated when the Ministry scientists advised setting the TAC for pilchard for 1995 as close to zero as possible because of the stock collapse due to the environmental perturbation which took place at the time. The industry persuaded the FAC to recommend to the Minister that the TAC be kept the same as it was in 1994 at 125 000 tonnes (Hopwood 1994). In the event the catch was reduced from 125 000 tonnes in 1994 to 40 000 tonnes in 1995 but not lower for short term economic reasons discussed further in Chapter 7.

4.3 Quotas

Any person who holds a right of exploitation may apply for the allocation of a quota and the Minister has the discretion to grant to the applicant a quota, to make it subject to conditions or to refuse the application (s16(1)). Regulation 3 of the Sea Fisheries Regulations requires that the application be made in a prescribed form specified in Annexure B of the Regulations. The quota is not transferable except with the consent of the Minister (s18).

The Permanent Secretary is required to keep a public register of every quota allocated and also record in the register any suspension, cancellation, reduction or transfer of a quota (s19).

If a quota holder furnishes inaccurate information, fails to comply with conditions imposed either under the quota or the licence or contravenes or fails to comply with the provisions of the Sea Fisheries Act or is convicted of an offence in terms of the Act, the Permanent Secretary may require the quota holder to show, within a period of 21 days from the date of the notice, why the quota allocated should not be suspended, cancelled or reduced (s17(1)). The Minister has the power to suspend, cancel or reduce the quota (s17(3)).

The Minister of Fisheries and Marine Resources, with the concurrence of the Minister of Finance, may charge quota fees (s2(1)). The quota fees may vary for different species caught, areas within which the fish may be caught or according to the purpose for which fish are caught; they may also vary according to the place where the fish will be processed or between different Namibian and non-Namibian quota holders (s20(3)).

Quota holders are required to keep records and furnish them to the Permanent Secretary as may be prescribed (s21(2)). The records required are specified in Part VI of the Regulations. A daily catch logbook and a landing logbook must be kept and the original logbook sheets must be handed over to the Ministry (Regulation 32). The quota holder must also submit a monthly return (reg. 33) specifying the vessel's name, the licence number and the landed mass and wet fish mass of each species in addition to the status of the quota for each species (Annexure L).

Fees are payable for quotas granted whether or not the quota is caught. The quota fee for the three main species, that is hake, horse mackerel and pilchard, are payable in four equal instalments each year. The quota fee for crab and the fee imposed on the tuna catch, which is not subject to quota, are payable within 30 days of the catch being verified and certified by a fisheries inspector.

A system of generous rebates on the quota fee was established to encourage greater Namibian ownership of the fishing fleet, the employment of Namibians on fishing vessels and the establishment of onshore processing facilities (Namibia, 1994b, Annexure A). Fees and rebates applicable are summarised in below.

For the purpose of determining rebates, vessels were defined as follows:

- A 'Namibian vessel' is one which is registered in Namibia, permanently based in Namibian waters, flies the Namibian flag, has at least 51% of its beneficial ownership held by Namibian citizens, and its crew is at least 80% Namibian.

- A 'Namibian based vessel' is one registered in Namibia, permanently based in Namibian waters, flies the Namibian flag, has less than 51% of its beneficial ownership in the hands of Namibian citizen's, and whose crew is less than 80% Namibian.

- A 'foreign vessel' is a vessel which does not qualify as a 'Namibian vessel' or a 'Namibian based vessel' (ibid., 1).

Rebates on the quota levy are offered to encourage fish processing ashore. 'Processed on land' is defined as a process taking place within the borders of Namibia by which the fish landed is changed by removing the head or intestines or by filleting, mincing, trimming or individually wrapping the fish, or by drying and/or salting the fish (ibid., Annexure A, p10]. The 'processing' required can

thus be minimal, and does not require value added activities such as producing prepared meals or fish fingers. It allows companies both to claim a generous subsidy in the form of a levy rebate, and to export the fish for value added processing abroad.

The **Sea Fisheries Fund**, previously known as the Sea Fisheries Research Fund, is a fund established specifically to finance a wide range of research (Namibia 1992a, s24). The levy does not go into general Government revenue but is administered by the Permanent Secretary of the MFMR, with the concurrence of the Minister of Finance (s23(2)). This fund was established for purposes of funding research in the Namibian fisheries sector. The Fund levy is paid on actual catch and not on quota.

The **by-catch fee,** referred to in Table 4, applies to commercial species for which the fisher does not have a quota. The level at which the fee is set is intended to make it worth while for the vessel to land the fish and not dump it, but not so attractive that the species will be targeted. It is an attempt to avoid having good fish dumped because a quota allocation is not held for it. Some by-catch is unavoidable.

	Quota fee Namibian vessels	Quota fee Namibian-based vessels	Quota fee foreign vessels	quota fee unspecified or other	by-catch fee	Fund levies	rebates
hake	400	600	800		1200 if caught in mid-water trawl	whole 18 headed gutted 25 fillet 45	200per tonne of wet hake landed and processed on land
horse mackerel	31.30	46.90	62.55			10	15.65 per tonne if fish is landed in Namibia
Pilchard	100	150		25 for fish-meal reduction		human consumption 25 fishmeal 10	
rock lobster *						125	
Tuna	200	300	400	1200 if caught for sashimi		sashimi 50 other 25	100 per tonne if landed at a Namibian port and processed on land
red crab				556		50	
spider crab				225		50	
kingklip					2400	25	
monk					2000	25	
sole						25	
kabeljou					2400		
steenbras					2400		

Table 4: Schedule of quota fees, fund levy fees, by-catch fees and levy rebates. Constructed from data provided by Ministry of Fisheries and Marine Resources. *no quota fees set because of small size of TAC.

The capturing of resource rent through quota levies and the extent of uncollected resource rent will be discussed in Chapter 7.

4.4 The licensing of fishing vessels and factories:

A vessel to be used as a fishing vessel and any premises or vessel which is to be used as a factory must be licensed (s26(1)). Details of the vessel which must be provided to the Ministry include its length, beam, gross registered tonnage, horse power of the main engine and safety certificates. It must also include the financing of the vessel, the name of the skipper, the number of temporary and permanent crew members and whether or not they are Namibian. Details of fish handling capacity must be given including the hold capacity for both wet and frozen fish, the freezing capacity, meal plant capacity and details of processing machinery. Details of the fishing gear to be used to catch particular fish stocks must also be provided (Namibia 1993a, Annexure C).

The Minister may make the licence subject to conditions (s26(5)(b)). In the case of a fishing vessel, the conditions include the display of the registration number on the fishing vessel (regulation 50), the area within and period during which the catching of fish by the vessel is authorised and the type of fishing gear which may be used (regulation 12 - 17). The method or methods that may be employed and the specifying of any species of fish which may or may not be caught by the fishing vessel. The minimum size of a species may be specified (s26(5)(viii)) and the discarding of fish prohibited (s26(5)(ix)). Regulation 42 prohibits the discarding of any edible fish and specifically lists 19 species in Annexure M (Namibia 1993a) which must not be discarded.

The placement on board of a fishing vessel of fishery control officers is also provided for (s26(5)(b)(xiii)). The master of a fishing or factory vessel must allow any fishery control officer or any other person designated by the Minister for a specific task to board and remain on board. Ministry officials must be given access to any fish on board, fishing gear and documentation to enable them to undertake their duties effectively (regulation 48).

The tuna catch is controlled only by limiting the number of vessels. Catches of other major species are controlled both by licensing and by quota (see Ch7, 1.2.3).

4.5 International agreements and permits:

The Sea Fisheries Act provides for foreign fishing concerns being able to avail themselves of an alternative to the system of licences and quotas. The President of Namibia may conclude fisheries

agreements with foreign states (s27(1)). In such instances the Minister may issue a permit for the operation of a fishing vessel (s27(2)), shall determine the fees payable for the permit, the period for which the permit is valid and determine the conditions to which it is subject (s27(3)). The Minister may cancel, suspend or amend any of the conditions attached to the permit (s27(4)).

This section of the Act reflects the political pressures at the time the Sea Fisheries Act (1992) was drafted. The possibility of fisheries agreements being concluded, particularly one with the European Union (EU), was being actively considered. The political pressure from the EU, for an agreement aimed particularly at accommodating the Spanish freezer fleet targeting hake, was successfully resisted and no fisheries agreements have been entered into by the Namibian Government. The Cabinet subsequently issued a statement making known its decision not to conclude fisheries access agreements with any other state (MFMR 1994b). It is unlikely in the foreseeable future that the above provisions of the Act will be used.

4.6 Enforcement

4.6.1 Fishery Control Officers:

The Sea Fisheries Act provides for the appointment of fishery control officers within the Ministry (s5(1)) and makes possible the appointment of fisheries control officers drawn from the Ministry of Environment and Tourism, the Ministry of Works, Transport and Communications and the Ministry of Defence and in local authorities or statutory bodies (s5(2)).

Fisheries control officers and police officers have wide powers in terms of the Act. They may board any vessel or enter any factory, premises or place and may perform "such acts as may be necessary to ascertain whether the provisions of this Act have been or are being complied with" (s7(1)(a)). In relation to this they may examine any fishing gear (s7(1)(b)) and may enter and search premises, factories, vessels or vehicles and seize any thing if they have reasonable grounds to suspect that an offence in terms of the Act has been or is about to be committed (s7(1)(c). In the case of a person or a dwelling being searched, a search warrant would normally be required (s7(5)). In these circumstances they may also require people on a vessel or vehicle or premises or in a factory to furnish them with their names and addresses or may require the licensee of a fishing vessel to provide him or her with the names and addresses of the master and crew of the vessel (s7(1)(d)).

A fisheries control officer may order the master of a fishing vessel to stop the vessel, transit to a harbour or to a place at sea indicated by the officer (s7(1)(e)). The signal for stopping is prescribed in the Regulations (Part VIII, 44).

The master of a fishing vessel may be ordered to remove the vessel from a fishing harbour or not bring it into a fishing harbour if it is a foreign vessel (s7(f)(1)(i)), or if any crew member was convicted of an offence in terms of Namibia's fisheries laws (s7(f)(1)(ii)), or the vessel itself was used to commit an offence in terms of any law within Namibia's waters (s7(1)(f)(iii)).

A Fisheries control officer may also require assistance of any person employed on a vessel or vehicle or in a factory in order to ascertain whether the Sea Fisheries Act has been complied with (s7(1)(i)).

4.6.1.1 Powers extended beyond jurisdiction

Section 7(2) of the Act provides that the powers of a fisheries control officer

> "...may, in respect of any fishing or factory vessel licensed in terms of this Act or any vessel used as a fishing or factory vessel in the Namibian waters and in respect of any person or any fish, fish products, aquatic plants, shells, guano or fishing gear thereon, *be exercised also outside of Namibian waters.*" (s7(2); (my emphasis).

This would appear to be inconsistent with the provisions of the Law of the Sea Convention. The exercise of their powers "outside of Namibian waters" is too broad a provision and could lead to a major diplomatic incident if fisheries control officers were to act in conformity with this provision but in violation of international law.

There are some instances, however, where a fisheries control officer could legitimately exercise these powers "outside of Namibian waters" in terms of the Law of the Sea Convention:

(a) The first of these arises out of the powers of the flag state in relation to vessels registered in that state and flying its flag. Namibia, as the flag state, has jurisdiction over Namibian registered vessels and fisheries control officers have the right to exercise their powers outside of Namibian waters except in the territorial sea (O'Connell 1982, p735f) or internal waters of another state as this would constitute a violation of that state's jurisdiction.

(b) The second instance is in the case of hot pursuit. A hot pursuit operation against a Namibian registered vessel is covered by flag state jurisdiction. Hot pursuit of a foreign registered vessel is regulated by Article 111 of the Law of the Sea Convention. A hot pursuit operation must begin either within the territorial sea, the contiguous zone (in the case of customs, fiscal, immigration or sanitary laws) or in the EEZ where a violation of the laws which the coastal state is entitled to make in its EEZ is suspected. A visual or auditory signal to stop must be given within a distance that enables the signal to be seen or heard by the ship in question. If the vessel fails to stop the hot pursuit operation may begin and needs to be continuous. The hot pursuit operation may take place onto the high seas or into the EEZ of a neighbouring state but not into the territorial sea of another state as that would violate that state's sovereignty. The pursuit must be by a vessel or aircraft in government service and clearly identifiable as such. An aircraft may hand over the pursuit to a surface vessel which would then retain the continuity of the pursuit.

In this instance it would be legitimate for the fisheries control officer to exercise the powers defined in Article 7(1). However, in the instance, for example, of a foreign vessel being reported for violating Namibia's fisheries laws and if that vessel then left Namibian waters either for the high seas or the EEZ of another state, it would not be legitimate in terms of the LOSC for a vessel or aircraft to be sent to find that vessel and for Namibian fisheries control officers to exercise their Section 7(1) powers. Section 7(2) would, in this instance, be in conflict with the LOSC.

(c) In general the flag state has exclusive rights to exercise legislative and enforcement jurisdiction on the high seas (UN-LOSC 1982, Article 92). The exceptions to this rule relate to piracy, unauthorised broadcasting, slave and drug trafficking and to ships without nationality (see LOSC, article 110(1d)(1e),100(2)). None of these exceptions could allow the exercise any of the section 7(1) powers by a fisheries control officer on a non-Namibian vessel on the high seas with the possible exception of a ship without nationality. In this instance the powers would be restricted to "visiting and boarding" the vessel (ibid.).

(d) It cannot be argued that, as a condition of the licence, the owner of a vessel accepts the provisions of the Sea Fisheries Act as binding, and therefore accepts that the Act gives these section 7(2) powers to fisheries control officers in relation to licensed foreign vessels. The flag state of the vessel

concerned would validly argue that it is not within the gift of the vessel owner to waive flag state jurisdiction.

In other instances it would not be legitimate in terms of the LOSC for a fisheries control officer to exercise Section 7(1) powers outside of Namibian waters as Section 7(2) of the Sea Fisheries Act provides.

It should be noted that the intention of Government was to have the Sea Fisheries Act entirely consistent with the Law of the Sea Convention and that inconsistencies between Namibia's municipal law and the LOSC were regarded as errors in need of correction (Akwenda 1995). Instructions given to the Fisheries inspectorate are consistent with provisions of the LOSC rather than Section 7(2) of the Act (Ndjaba 1995).

4.6.1.2 Transboundary enforcement problems and interstate co-operation

Problems arise for the successful prosecution of offenders, particularly in instances of vessels not licensed to fish in Namibian waters, but perhaps licensed in Angolan waters, coming over the maritime border, fishing and returning to Angolan waters. Hot pursuit in term of the provisions of the LOSC becomes more difficult to implement as the pursuit would need to start while the vessel is still in Namibian waters. A solution to this problem needs to be found within the constraints of international law.

Namibia should pursue an agreement with Angola similar to that reached with South Africa. Through an exchange of letters between Namibia and South Africa dated 22 March 1991 (South Africa 1991), agreement was reached between Namibia and South Africa relating to violations of fishery laws in either state. Either Government may call upon the other to assist in apprehending or escorting offending vessels in the waters of either state. On notification through normal diplomatic channels, each Government will grant to the other the right to pursue and apprehend offending vessels that escape into their waters. Neither Government may render assistance to vessels which have been involved in illegal fishing in the waters of either state. As both "Namibian waters" and "South African waters" are defined in the Sea Fisheries Act (No. 29) 1992 and the South African Sea Fisheries Act 1973 as including territorial waters, the agreement appears to include territorial waters (Devine 1993, p494).

The existing agreement signed between Angola and Namibia on the 17 March 1994 to co-operate in the fisheries sector would provide the best context in which to conclude a protocol to achieve similar objectives to those agreed with South Africa (South Africa 1991). Unfortunately, due apparently to poor translation into English and poor legal drafting, references in the agreement to co-operation in enforcement refer to "persecution and extradiction of illegal fishing vessels" (*sic*) (MFMR 1994a, p3). It would seem that the terms 'prosecution' (and not persecution) and 'extradition' (rather than extradiction) were intended. A vessel cannot be extradited, as proposed in the agreement but, under certain circumstances, the vessel's officers may be extradited (ibid., p2). The intention of the two states is clear, nevertheless, and represents an important move toward greater co-operation in research and the management of the fish stocks and fishing activity.

The inadequacies of the state in Angola, resulting from the political problems of the country, have inhibited attempts to improve the functioning of the management of transboundary fish stocks.

4.6.2 Offences and penalties, forfeiture and seizure

4.6.2.1 Offences:

The Act makes it an offence to catch fish using firearms, explosives, poison or noxious substances (s33(1)(a)). It prohibits the use of any type of net which is allowed to drift for the purpose of trapping or entangling fish and which is longer than 2.5 kilometres or shorter if so prescribed (s33(1)(b)). Regulation 12 1(a) further limits the use of such nets by prohibiting their use unless specific authorisation has been given. It is an offence to use any fishing gear or method specifically prohibited under the Act or any fishing gear or method other than prescribed fishing gear (s33(1)c,d)). The Sea Fisheries Regulations specify the type of gear which may be used and mesh sizes (Part III and Part IV).

The possession, sale or offering for sale of any fish prohibited under the Act is an offence (s33(1(e)).

It is an offence to operate a vessel as a fishing vessel or a premises, vessel or vehicle as a factory without a licence (s33(f)). Discarding is prohibited (s33(g)) and the dumping or discharging in Namibian waters of anything which may be injurious to marine life or disturb the ecological balance in Namibian waters is also forbidden (s33(h)).

A series of offences relate to Fisheries Control Officers. They include non-compliance with the requirements or orders of a fisheries control officer (s33(i), any form of hindrance to the fulfilment of his or her duties (s33(j)), impersonation of a fisheries control officer (s33(k)), any attempt to bribe ("gifts or consideration") an officer or, on the part of a fisheries control officer, to accept a bribe (s33(s,t)).

The licensee of a fishing vessel must not allow the vessel to be used in contravention of the provisions of the Act (s33(m)). Infringements of the provisions on marine reserves is an offence (s33(n)). Any attempt to withhold information required under the terms of the Act or to falsify that information (s33(o)) or any attempt to make difficult identification of the vessel (s33(q,r) is an offence. Any attempt to damage or dispose of any vessel, fishing gear, equipment or document to prevent its seizure, forfeiture, sale, discovery or its being used as evidence in court is also an offence (s33(n)).

4.6.2.2 Penalties:

The maximum penalty on conviction under the Act is a fine not exceeding N$1 000 000 (about £133 000) or to imprisonment for a period not exceeding fifteen years or both (s33). In accordance with the provisions of the Law of the Sea Convention, foreign nationals may not be given a prison sentence (UN-LOSC 1982, Art. 73(3)).

Additional penalties may be imposed as a result of a determination of a monetary value of any advantage gained as a consequence of the offence and a fine equal to three times the value so determined may be imposed (s34(1)).

The court in addition *may* order the forfeiture to the state of the vessel involved in an offence under the Act, its fishing gear and catch (s35(1)(a)). If a foreign vessel fishes without a licence or permit, the vessel *shall* in addition be forfeited to the state together with its fishing gear and catch (s35(2)(a)(i). Compliance with Article 72(2) of the LOSC is accommodated in s38 of the Act which provides for the release of a foreign vessel if a secure guarantee equal to the value of the vessel is paid to the state. If it breaks the conditions of its licence then the fishing gear and catch *shall* be forfeited to the state (s35(2)(a)(ii)).

4.6.2.3 The question of presumption:

There is a significant list of presumptions to be found in the Act relating to criminal proceeding effectively placing the burden of proof on the accused.

Section 36 (3) of the Act allows for seven instances where a presumption is permitted in criminal proceedings in terms of the Act and places an onus on the accused to prove the contrary. This raises a problem as some of these presumptions, if tested in court, may well be challenged as unconstitutional.

Article 12 (d) of the Namibian Constitution (Namibia 1990a) requires that

> "(d) All persons charged with an offence shall be presumed innocent until proven guilty according to law..."

The court may then require that the legislature correct the impugned law within a specified time (Article 25(1)(a)).

The question of presumption has been dealt with by the Namibian courts. In the case S v. Pineiro, heard in the Namibian High Court in August 1991, this question arose in a prosecution under the Sea Fisheries Act 58 of 1973. Both judges concurred that the presumption in that case be struck down.

In essence the argument was that, if the presumption has the effect of placing an onus on the accused to prove his innocence, then the presumption would be in conflict with Article 12 (d) of the Constitution. Judge Levy took the view that the accused would be "presumed to be guilty merely on a prosecution and without any evidence of a contravention of the Sea Fisheries Act" (S v Pineiro 1993 (2) SACR 412 (Nm)).

The courts recognised that legislation frequently contains rebuttable presumptions to enable the state to prosecute efficiently. Judge Levy favourably discussed the "rational connection" test then quoted the judgement of the Appellate Division of South Africa in the case of S v Marwane in 1982 where it was argued that a requirement to rebut a presumption

> "...does not render the statute unconstitutional on the ground that it compels the defendant to be a witness against himself. However, if the statutory presumption is cast in such form as, in effect, to impose upon the defendant the burden of proving his innocence, as opposed to the prosecution being required to prove the defendant's guilt beyond a reasonable doubt with the aid of a presumption, the statutory presumption will be struck down as unconstitutional". S v Pineiro 1993 (2)SACR 412 (Mn).

It would seem that some of the presumptions in the Sea Fisheries Act could be challenged by the court as unconstitutional.

The first of these is the presumption that a factory or installation, within 5 nm of an area where living marine resources have died or are dying or the marketability of these resources has been adversely affected or the ecological balance has been or is being disturbed, is responsible for discharging something into the sea which has caused the damage s36(3)(a). On the face of it, there would appear to be little that the State would need to prove with the use of this presumption to obtain a prosecution in terms the Act and that it is likely to be rejected by a court.

A second presumption, that a vessel used as a factory vessel and carrying more that one metric tonne of fish or fish products while in Namibian waters, shall be presumed to have been used as a factory within Namibian waters (s36(3)(e), could be stuck down by the courts. The vessel could legitimately claim innocent passage through Namibian waters!

There are other less vulnerable presumptions in the Act:

- It is presumed that, if it is proved that a net, line or cable was in any manner abandoned in the sea by a fishing vessel, the vessel was at that time fishing (s36(3(b). This presumption is safe as there would be no other purpose for which a fishing vessel would have a net or line in the sea other than for the purpose of catching fish.

- If a vessel carrying a cargo of fish has over a period of two or more days been present in Namibian waters and has generally remained in a particular area or if it has periodically reversed its course to and from Namibia waters, then that vessel shall be presumed to have been fishing (s36(3)(c)). Such movements are characteristic of a vessel engaged in fishing and it would be reasonable to presume that it is engaged in fishing.

- If a foreign vessel is observed catching fish in Namibian waters on two or more occasions within a period of up to two months, then it shall be presumed that the vessel was being used as a fishing vessel for the whole period between the first and the last date on which it was observed (s36(3)(d)).

- If it is proved that samples taken of fish found on board a vessel are of a particular species, it shall be presumed that the whole cargo is composed of the same species (s36(3)(f)).

- If any marine resource covered by the Act is proved to have been found on a vessel, in a vehicle or aircraft or at any premises, then the owner and every person on board the vessel, or in the vehicle or aircraft shall be presumed to have been in possession of these resources (s36(3)(g)).

These presumptions reflect the great difficulty that fisheries managers have in enforcing fisheries legislation over vast expanses of ocean, not helped, in the case of Namibia, by the presence of coastal fog for more that half the days of the year. They also reflect determination by the state to ensure effective management of the fisheries resources.

4.7 Sea Fishery Advisory Council

A Sea Fishery Advisory Council is established by the Act (Part III). Its task is to advise the Minister on the management and development of sea fisheries in Namibia, on matters on which the Minister is required by the Act to consult the Advisory Council and on any matters which the Minister refers to the Council for investigation and advice (s8).

The Advisory Council consists of the Permanent Secretary and at least 15 other persons appointed by the Minister. Three of these must be officers of the Ministry of Fisheries and Marine Resources, one officer each from the Ministry of Trade and Industry, the Ministry of Finance and the Ministry of Environment and Tourism.

Two shall be persons who, in the opinion of the Minister, have the required knowledge and expertise in the field of marine biology or sea fishery economics and who are not in the full time employment of the state. Two shall be persons who, in the opinion of the Minister, fairly represent employees in the fishing industry. Here the Minister must consult with the labour union representative of employees in the industry (s9(2)). Finally, five shall be persons who, again in the opinion of the

Minister, have experience in or have shown capacity in any matter relating to any branch of the fishing industry (s9(1)).

The parliamentary opposition spokesperson was appointed to the Council by the Minister. Appointees drawn from the industry are a mix of well-known names from the established fishing companies and others who have entered the industry since independence.

Members of the Advisory Council shall hold office for a period determined by the Minister, but not exceeding three years, and shall be eligible for reappointment (s10(1)).

4.8 Observations

Several observations need to be made regarding the Sea Fisheries Advisory Council. As the name of the Council suggests, its function is essentially advisory. Although the Minister is obliged to consult the Council in certain matters, he or she is not obliged to act on the advice given by the Council. Thus the Minister exercises considerable power over fisheries matters. In practice, the Minister tends to follow the advice given by officials of the Ministry and major decisions are made in consultation with the Cabinet.

The Minister appoints all Council members. They are not elected to the Council by the bodies from which they are drawn and, as such, are not representative; the Council does not, therefore, necessarily reflect the opinion of constituents within the fishing industry.

Meetings of the Council are not open to the public. It is arguable that they ought to be because the public has an interest in the management of a resource that belongs to the country as a whole. Exposing the deliberations of the Council to public scrutiny could help to strengthen the Ministry in its role of ensuring the long term optimal use of fisheries resources for the benefit of all Namibians, and to balance the pressure from industry, exerted through the Council, for TACs to be set at levels higher than those recommended by the scientists.

It would also be helpful if a representative of the broader public interest was included in the Council. At present there does not exist in Namibia an NGO which has the management of Namibia's living marine resources as a major concern. The possibility of including a representative of a suitable NGO

does not at present appear to be a very viable option. If it were to become so, this ought to be considered.

Although, in a sense, the MFMR acts as guarantors of the public interest, it could be beneficial for the office of the Ombudsman to appoint a fisheries specialist to the Council, in fulfilment of the constitutional function of that office to

> "investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non- renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia" (Namibia 1990a, Art.91 (c)).

Scientific participation in the Council comes through scientists employed by the Ministry making presentations of their recommendations to the Council. The role of scientific advice could be enhanced by the full inclusion on the Council of representatives of the scientific community.

If, therefore, one were to describe the Namibian fisheries management system in terms of the co-management spectrum suggested by Sen and Nielsen (Sen and Nielsen 1996), Namibia's system of management would be 'consultative' as opposed to being closer to a 'user group' management system. There are no other bodies with which the Ministry is required to consult over management issues.

5. Note on the establishment of the National Fishing Corporation.

The idea of a state company, in general terms, was first mooted by the pre-independence administration in Namibia (the "public company to be formed", Table 2 Chapter 2),but was developed after independence to fulfil certain functions. The Corporation was established by the 1991 National Fishing Corporation of Namibia Act (Namibia 1991b) as a public company.

The purpose of the Corporation is to engage in commercial activity from harvesting to the processing and marketing of fish (s5(1)(a)), to take on, at the request of Government, research and other specific projects (s5(1)(b)) and to act as a channel for financing "such operations or projects of such businesses and undertakings engaged in the fishing industry as the Minister may specify" (s5(1)(c)).

All shares are currently still held by Government. The share structure of the Corporation, the voting rights of shareholders and dividends of the Corporation are described in the Table 5 below:

share class	to be held by	no. of shares	%of total share	votes	% of total votes	% dividend	% of dividend per 1% of shares
A	Government	51m	17%	17m	25.76	15%	0.88%
B	Government	200m	66.66%	none	none	none	none
C	Namibian citizens, permanent residents *	19.6m	6.53%	19.6m	29.7	34%	5.23%
D	Companies incorporated in Namibia with 51% Namibian shareholdings *	14.7m	4.9%	14.7m	22.27	25.5%	5.2%
E	Companies incorporated anywhere with less than 51% Namibian shareholdings *	14.7m	4.9%	14.7m	22.27	25.5%	5.2%

Table 5: Summary of shares of the National Fishing Corporation. Source: data extracted from (GRN 1991): *Government may subscribe for class C D and E shares not taken up upon the conclusion of an offer of shares for public subscription (s5 (6)(e)). Information extracted from the National Fishing Corporation of Namibia Act, No. 28, 1991.

This reveals an intention by Government to launch the company but then neither ultimately to control it nor take a share of the profits commensurate with its shareholdings. The intention was to grant to Namibian citizens resident in Namibia and Namibian companies a broader opportunity to participate in the benefits of the fisheries sector (Kirkpatrick 1995)[24].

The National Fishing Corporation, also known as Fishcor, is the holding company of Seaflower Whitefish (Pty) Ltd, in which an Icelandic company has a 20% stake, and Seaflower Rock Lobster (Pty) Ltd. The floating of a share offer was delayed in 1994/5 because of poor performance. MFMR, resolved to deal with the company as it would any other, reduced the company's quota because it had not caught its previous year's quota and was not up to date with quota fee payments (Kirkpatrick, 1995). Shares in the Corporation have not yet been floated publicly, neither has it undertaken other non-commercial functions.

The Corporation could be used to undertake useful functions, particularly to overcome certain financing difficulties faced by small newcomer companies and to offer training and support. Further discussion of this is found in Chapter nine.

[24] Note the problems raised in Ch.8, section 3.3 on attempting to distribute benefit from the resource on the basis of the residency or nationality of shareholders.

6. Note on Namibia's regional role in as SADC co-ordinator for fisheries sector

In August 1991 the Council of the then Southern African Development Co-ordination Conference (SADCC) formally allocated the task of co-ordinating the SADC marine fisheries sector to Namibia (Ndabeni 1995) a role it retained in the Southern African Development Community (SADC), the SADCC's successor organisation[25]. Six of the member states of SADC, Angola, Namibia, South Africa, Mozambique, Tanzania and Mauritius, are coastal states. Their joint continuous coastline is some 10 000 kilometres long and they have a collective EEZ of about 3 million square kilometres (ibid.).

A number of tasks were identified as being beneficially tackled on a regional basis (SADC 1994). Regional co-ordination of scientific research, resource assessment and management are essential for the successful management of transboundary stocks. Surveillance systems, particularly satellite surveillance systems, monitoring the movement of vessels, could be more productively undertaken on a regional basis. Co-operation between states on the inspection of vessels, particularly in maritime border areas, would be of considerable benefit in controlling fishing (Ndabeni 1995).

The SADC effort at co-ordination in the fisheries sector and the role of the Namibian Government in this exercise arises out of a real need for joint action over certain problems that are not confined within one state or where the expertise required could be fruitfully shared more broadly in the region. It once again emphasises the importance of co-operation between states in the management of transboundary resources and the ecosystems that form their habitat.

7. Conclusion

This chapter has expanded on the objectives of Namibian Government policy for the fisheries sector, examined the targets the Ministry has set itself and has detailed the new fisheries regime that has been established in Namibia since independence.

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[25] SADCC, established in April, 1980, was replaced in July 1992 with the SADC, which in 1997 had 12 member states (SADC 1994).

The thread is traced from the requirement of the Constitution that fisheries resources are sustainably utilised for the benefit of present and future generations of Namibians, through the elaboration of objectives in the White Paper and the targets which the MFMR set itself, to the establishment of the new regime for Namibian Fisheries. The framework for the new regime is found in the Sea Fisheries Act and the Sea Fisheries Regulations and fleshed out in implementation.

The Namibian fisheries is functionally part of the global sector. This is reflected in the institutions of the sector in Namibia despite some relatively minor departures such as the legal powers of fisheries control officers outside of Namibia's borders. It establishes the role that Namibia has in the region, both as co-ordinator of the fisheries sector for the region, and as initiator of regional management relating to specific species, which was discussed in the previous chapter.

The Chapter also establishes that the management system is one of regulation by a central authority and, in Sen and Nielsen's co-management spectrum, may be described as 'consultative'. This, however, reflects a shift from a much more 'instructive' system (Ch. 4, 4) and reflects a predisposition towards a more co-operative approach.

An assessment of how the system meets the objectives of government policy follows in the next two chapters.

Chapter Seven

POST-INDEPENDENCE PERFORMANCE: SUSTAINABILITY, OPTIMAL RESOURCE USE AND RENTS

Namibia's new management system may be judged on how well it is meeting its primary objectives of optimal and sustainable utilisation of the marine fisheries resources and on how the benefits of these resources are being distributed. This chapter focuses on the first of these two issues; it will review the performance of Namibia's post-independence fisheries management, examining what has happened to the fish stocks during the period since 1990 and assessing the available evidence to establish some measure of the efficiency of the sector during this period.

The marine sciences are still relatively undeveloped, in part because of the greater difficulty of observing fish compared to land dwelling species. The lack of knowledge and understanding of the dynamics of fish populations and their biological characteristics coupled with the uncertainty created by periodic major environmental perturbations and their impact on marine species means that management decisions are made under conditions of considerable uncertainty. The implications of this are discussed in the second section of the chapter.

The biological optimum level of biomass and surplus production varies over time so that estimates of its level are difficult and approximate. Restoring stocks and maintaining them at this level, however, is not sufficient to constitute good management. Also of importance are the potential resource rents associated with each fishery and what becomes of those rents. Thus the existence of potential resource rents, particularly those not collected by the Government, need to be considered as these represent value that belongs to the people of Namibia as a whole and ought to be utilised for their benefit. These rents will vary considerably over time as they will be dependent on the abundance of the resource, the fishing effort needed to harvest the resource and, very significantly, the prevailing market conditions. This chapter establishes that there are resource rents or potential resource rents associated with the fisheries. These are substantial and are accruing to industry either as excess profits or as financing of excess capacity. The available data are inadequate for the more accurate calculation of these rents.

1. Sustainable and optimal management?

It was demonstrated in Chapter three that it is possible to harvest fish on a sustainable basis in a non-optimal manner. In a sense, economic optimality implies a level close to biological optimality so that the latter is subsumed in the concept. The economic optimal may coincide with the biological optimal or it may be more conservative than the biological optimal level of offtake (see Ch. 2, 1.2.2). It is not sufficient that the harvesting be sustainable; it needs also to be optimal otherwise there is a waste of potential rent from the fisheries.

The uncertainties of the marine sciences mean that there are inevitably uncertainties regarding what might be an optimal level of utilisation at any one particular point in time. The variability of the marine environment and the consequent variability in the capacity of that environment to maintain particular levels of fish stocks, means that optimal utilisation of the resource will be variable over time. An optimal level of fisheries resource use thus needs to be a range within which harvesting of the stocks will vary. In the context of the Namibian fisheries sector it will be, in most instances, a target towards which management must work in restoring depleted fish stocks in the short to medium term.

Examination of the performance of Namibia's key commercial fish stocks since 1990 establishes what has happened biologically to each stock, whether the biomass and TAC could be considered optimal and, if not, whether the strategy for restoration of the stock is optimal. An analysis of what has happened to these stocks since independence exposes key factors in the management system which constitute sub-optimal performance.

1.1 The major fisheries

The pilchard, hake and horse mackerel stocks are at present Namibia's most important commercial stocks. The deep water orange roughy fisheries may become an important fishery in the next few years.

1.1.1 The pilchard stock

The pre-independence catch history for pilchard was reviewed in Chapter 2. Declared catches rose to nearly 1.4 million tonnes in 1968, collapsed and then recovered slightly in the early 1970s only to collapse completely by the latter part of the 1970s. Any increase in the size of the biomass since the mid-1970s has been tracked by an increase in the catch and the biomass has never recovered to a level remotely close to its former size. In 1964/5 the biomass was estimated to have been about 11 million tonnes (Boyer et al. 1995, p1). This had collapsed to about a little over 1 million tonnes in

1970, rose again to about 2 million tonnes in 1974 but had become depleted by 1977. This is graphically presented in Figure 18 (a) below.

Between 1990 and 1992 there was a significant increase in the size of the pilchard stock (ibid.) rising from very low levels in the late 1980s to an estimated 780 000 tonnes in 1991 (Cloete et al. 1996, p4). The biomass then declined sharply after 1992 which seemed to be associated with the environmental perturbation, which became evident in 1993 and continued through to 1995, and which is linked to the cyclical El Niño/Southern Oscillation (ENSO) phenomenon. This will be discussed further below. The stock collapsed from an estimated 780 000 tonnes in 1991, 75% of which was in Namibian waters, to about 100 000 tonnes by the beginning of 1995 with half the stock in Angolan waters (Figure 18 (b)).

Although the TAC actually increased during this period of biomass decline, such a dramatic decrease could not be explained by the size of the catches alone as the loss of biomass is considerably greater than the sum of the catches during this period without taking into account any recruitment there might have been during this period. The loss of pilchard biomass was an estimated 680 000 tonnes while the total catch during this period was 312 026 tonnes, leaving 368 000 tonnes unaccounted for. The most likely explanation is increased natural mortality. Over-fishing occurred in the sense that, at a time when the stock was badly depleted, the small biomass remaining was put under particular stress through an increase in the fishing mortality rate of the surviving stock (ibid., p5).

From 1992/93 it was evident that biomass of pilchard was decreasing yet the pilchard TAC increased until that for 1995 was decided in late 1994. The TAC was then reduced to 40 000 tonnes for 1995 and 20 000 tonnes for 1996 instead of the moratorium called for by the scientists being imposed. These developments, in conflict with the commitment of Government to restore the stocks, are explained partly by the decision making procedure and partly by overcapacity and inflexibility within the industry. This is discussed in section 2.3 and section 3 below.

By 1996 the biomass was estimated to be 10 000 tonnes (ibid., p4), or about .09% of the biomass of the mid-1960s. A biomass of the mid-1960s level of 11 million tonnes would be well above the biomass required for optimal productivity of the stock (Ch3, 1.2.1) but the comparison does give an indication of just how low the stock was by 1996. Based on the expected long term yield estimated in the 1991 White Paper (Namibia 1991, p23), a pilchard biomass of between 1.5 and 2.5 million tonnes is considered as being optimal, using a fishing mortality rate of .2-.35 (Cloete et al. 1996, p4).

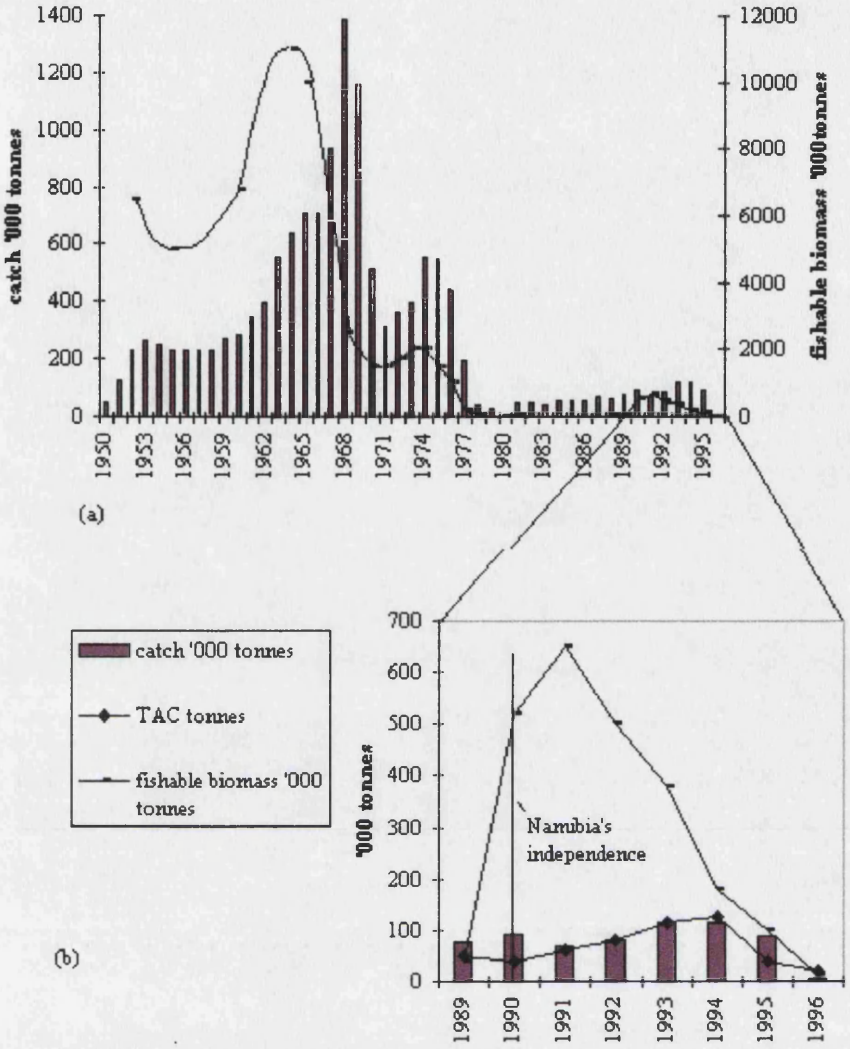

Figure 18: Pilchard catch, biomass and TAC. (a) Catch (left y axis) and biomass (right y axis, smaller scale), showing historically low level of pilchard biomass; (b) developments since the 1989, year before independence, showing rapid improvement then collapse of biomass, rise in TAC and catch between 1991 and 1994 when biomass was decreasing. The TAC set at 20 000 tonnes in 1996 of which only 4200 tonnes was caught. Source: for biomass estimates: Boyer, (1995), and MFMR for catch statistics and TACs.

A characteristic of Namibia's pilchard stock as it declines is that it tends to move northwards (Boyer et al. 1995, p1 and figure 5). This northwards shift of the stock appears to be related to unfavourable environmental conditions in the southern and central areas at the time but could also be due to over-fishing in the central areas of the coast (ibid.). In November 1995 the Namibian research vessel, Welwitschia, assisted by commercial purse-seiners, conducted a survey of the pilchard stock in northern Namibian waters and was unable to find any shoals (Cloete et al., 1996, p3); what remained of the pilchard stock, estimated at only 10 000 tonnes, had moved into Angolan waters (ibid.).

The recovery of similar stocks elsewhere offers an indication of how long it might be before the Namibian pilchard stock reaches a biomass offering optimal utilisation, if a moratorium on fishing pilchard were to be called. The Californian sardine, for example, was estimated to have a biomass of about 5 million tonnes in the1930s. The stock collapsed to very low levels in the early 1950s, a moratorium was declared in 1967 but the estimated biomass in the 1970s remained at about five thousand tonnes. The stock had grown to about 20 000 tonnes by 1986 (ibid., p3).

In general, the population dynamic in which per capita reproductive success declines at low populations levels, referred to as depensation, does not seem to be too common a phenomenon. A study of the spawner abundance and the number of surviving progeny of 128 depleted fish stocks (Myers et al., 1995, pp1106-1108), established that only 3 of the 128 stocks indicated significant depensation. However, one of the three was the Californian sardine (ibid., p1107), a small pelagic species with similar biological characteristics to Namibia's pilchard stock. Like the Californian sardine stock in the 1950s, the particularly low level to which the Namibian pilchard stock has been driven is thus a cause for concern. On the other hand the very high primary production of the Benguela system might allow for a more rapid recovery of the stock if a moratorium were implemented.

Assessment: This stock is a long way off having an optimal biomass and associated offtake. Concerns about stock survival are justified although, with more stringent conservation, there is no evidence that it could not be restored. It is arguable that this stock is not being sustainably managed even in the sense that it is being given a reasonable chance of recovery.

As the strategy of slowly rebuilding the stock while continuing to fish a proportion of the stock has now been tested for almost 20 years and has not worked, it would seem necessary, following an 'adaptive management'[26] approach, to change this strategy and declare a moratorium.

1.1.2 Management of the hake stock

It has been noted that hakes are Namibia's most important commercial species of fish (Ch. 2) and that the two commercial species of hake, the Cape hake and the deep water hake, are treated as one for statistical purposes because of difficulties of identification. The pre-independence catch history of hake was reviewed in Chapter 2. Catches of hake rose to 850 000 tonnes in 1972 then collapsed

[26] 'Adaptive management' is an approach to dealing with uncertainty in the management of renewable resources, such as fisheries (Walters (1986). It recognises the paucity of scientific knowledge of natural resources and seeks to learn about the optimal harvesting of natural populations through experience, by probing and experimentation, leading to adapting management practice according to what is learnt. For full treatment of the subject see C. Walters 1986.

as a result of over-exploitation and were in a seriously depleted state at the time of independence in 1990 (see Figure 19(a)).

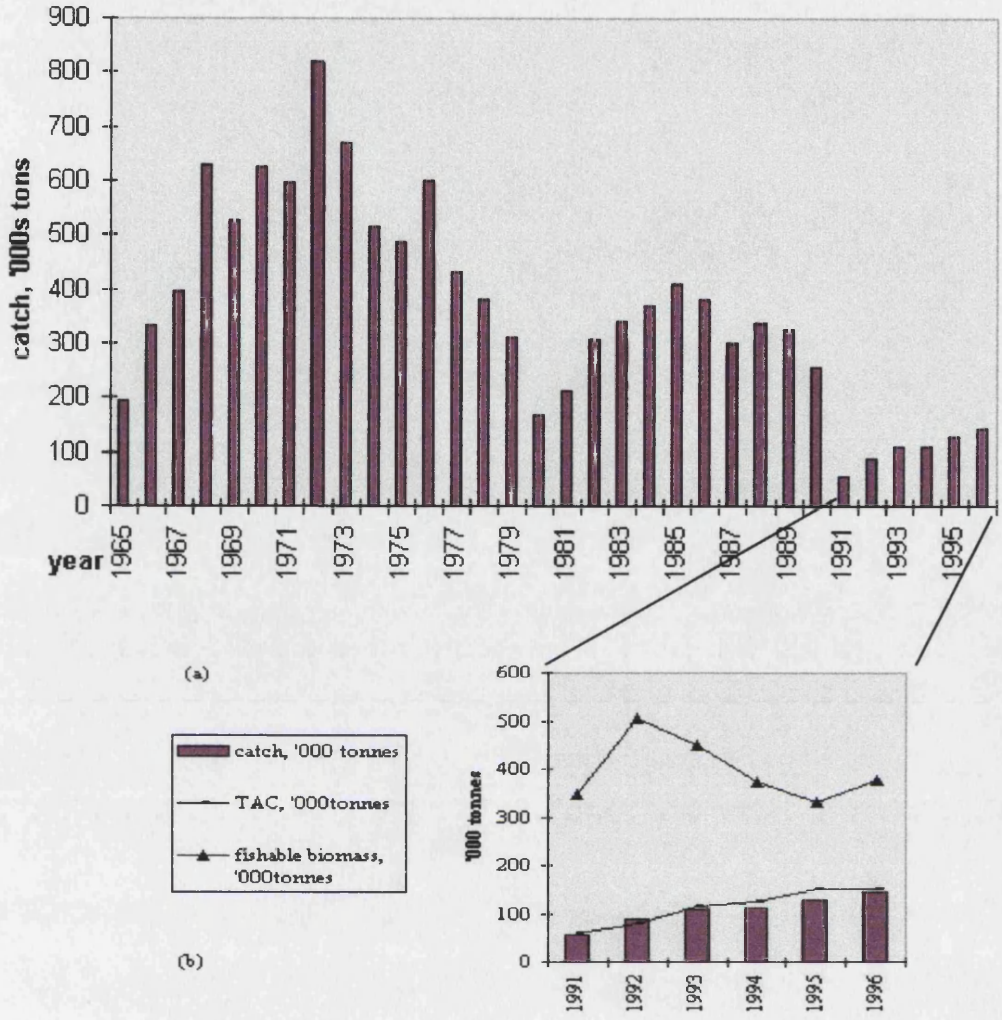

Figure 19: (a) Catch history for hakes. (b) Developments since 1990 which shows a steady rise in the catch and contrasts the decrease in biomass since 1992 while TAC and catch continued to grow. Data from ICSEAF Statistical Bulletins and Hamukuaya and Voges 1996.

The declared catch in 1988 was 305 720 tonnes (ICSEAF 1989) and the estimated catch in 1989 was 292 943 tonnes of hake (MFMR/CSO Basemod). In 1990 the fishable biomass was estimated at 130 000 tonnes (Hamukuaya and Voges 1996, p2) and some 83% of the hake sampled were juveniles between 2 and 3 years old (MFMR 1991).

There was initially a general improvement in the condition of the stocks due to the strict conservation measures undertaken by the Ministry of Fisheries and Marine Resources after independence, coupled with exceptionally good recruitment in 1988 and 1990 (Hamukuaya 1994, p74). By late 1992 the fishable biomass had reached 530 000 tonnes (Hamukuaya and Voges 1996). From early 1993 until 1995 the fishable biomass of hake declined and reached a level of about 230 000 tonnes by October

1994 (Hamukuaya and Voges 1996). In 1994, 70% of the samples from commercial trawls were between 5 and 6 years old (ibid., p74) showing poor recent recruitment to the stock.

The generally decreasing trend becomes much more disturbing when a more detailed examination of the trends for the southern, central and northern regions for both deep water and Cape hake is undertaken. This is not reflected in aggregated data of Figure 19 (b) and reveals a change in the balance of the biomass of the two species and the regional distribution of that change. The fishable biomass of Cape hake declined from about 400 000 tonnes in May 1992 to a level of about 200 000 tonnes in March 1996, a trend "possibly due to high fishing pressure associated with poor recruitment" (Hamukuaya and Voges 1996, p2).

The Cape hake biomass had declined mostly in the central region but had increased significantly in the southern region between 1990 and 1994 (Hamukuaya 1994, 1.2). Shoreward displacement of oxygen deficient water in the central area where the mud belt occurs (ch. 2, 1.1) probably contributed to poor recruitment as a result of high mortality among juvenile hake (Hamukuaya 1994). Walvis Bay is in the middle of this section of the coast and is the port where most fishing vessels are based. An increasing proportion of the hake quota has been made available to wet fish trawlers to encourage an increase in employment in on-shore processing. Wet fish vessels go out to sea for a shorter period than freezer trawlers, as they are bringing in fresh fish to be frozen on land or marketed fresh. They consequently have a greater incentive than freezer trawlers to fish as close to port as possible as the product unit costs of steaming to and from the fishing grounds are greater for wet fish trawlers than for freezer trawlers. The fishing grounds closest to the port of Walvis Bay have had the greatest fishing effort directed at them which may help explain the state of the stock in that area.

This has been exacerbated by a heavy tax on fuel which provides an additional incentive to fish the stocks located as close as possible to port, given their significance in the total costs, about 20-30% (Martin 1995), of running a fishing trawler[27]. Taxing fuel results in taxing mobility to the more distant fishing grounds. Abolishing the fuel tax would help to bring about more even exploitation of the fishing grounds and take the pressure off those closest to port. The revenue would be better recovered through addition payment on the quota levy.

Using catch rates in kilograms per hour data, Hamukuaya and Voges showed how the depth distribution of hake stocks had changed between 1990 and 1996 (Hamukuaya and Voges 1996, p9). They showed that the existing fishable biomass was now in deeper water because of the relative

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[27] A figure of 20% of costs is given for the global industry as a whole in Table 29, FAO 1992.

decline of Cape Hake and rise of deep water hake (Figure 20). They recommended that the minimum fishing depth limit be increased from the 200m isobath to the 300m isobath as the juvenile Cape hake are found in the shallower water and in this way would be afforded protection that would assist in the recovery of the stock (ibid., p10).

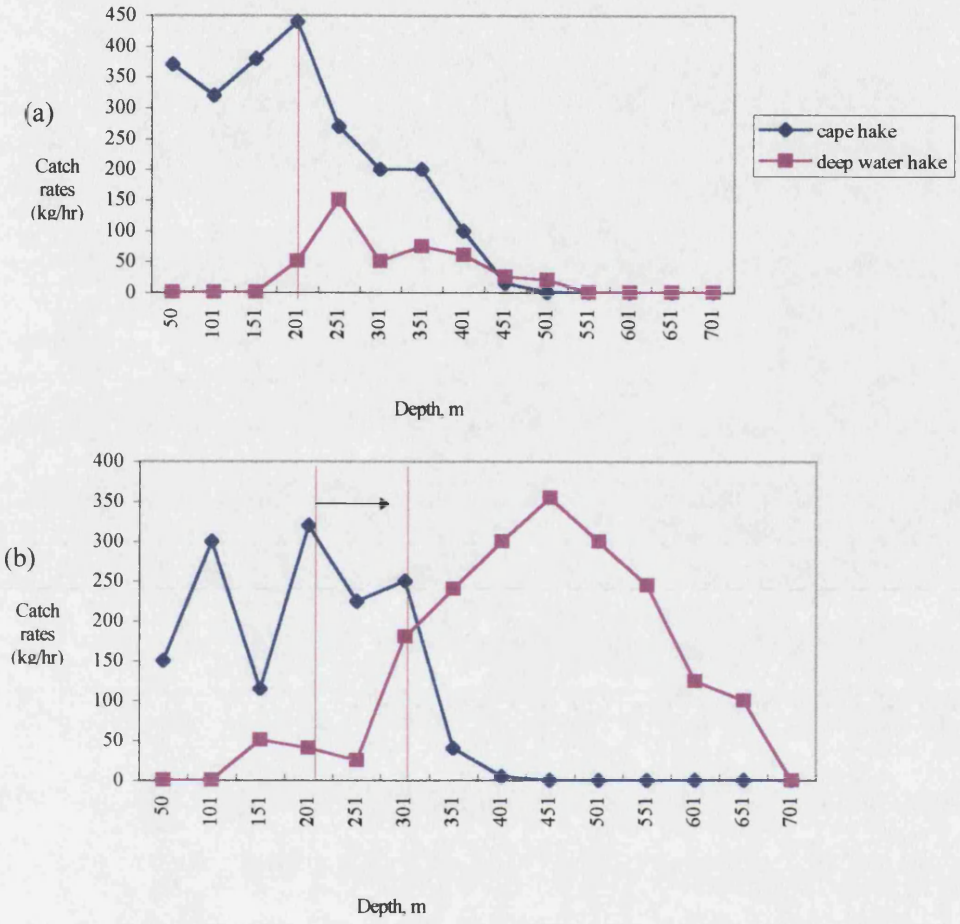

Figure 20: Depth distribution of hake stocks in (a) 1990 and (b) 1996. → indicates the proposed change in the fishing depth limit for hake from 200m to 300m. Source: Hamukuaya and Voges 1996, p9.

Between 1990 and February 1996 the deep water hake biomass had increased ten-fold to about 200 000 tonnes. Deep water hake biomass increased in the northern, central and southern regions but the increase in the southern region was the most pronounced (ibid.). The increase could partly be explained by the migration of this species from South African waters into the southern region (ibid.) thus underscoring, if correct, the importance of a co-operative approach between states on the management of a large marine ecosystem that straddles maritime borders. The deep water hake made up 15% of the fishable hake biomass in 1991(ibid.) but by 1996 it constituted about 50% of that biomass.

The mesh size restriction for hake of 110cm does not seem to be adequate for protecting smaller size fish. For the period 1990-1994, according to average trawl survey data, approximately 70% of 2-3 year olds and 3-4 year olds (25-34 cm and 35-44cm sizes) had disappeared. Scientific opinion was that this "is not easily attributed to adverse conditions and natural mortality alone" (Eiriksson 1996, p2) and that the most likely explanation was "higher fishery induced mortality than previously contemplated for such small fish" (ibid.). This means there is a low yield per recruit to the stock and too few individuals within the stock reaching the most profitable size (ibid.)[28]. Eiriksson also questioned whether the spawning stock was "above critical levels, as recruitment indices have been estimated low for the whole of the period 1990-1995" (ibid.).

Assessment: This stock is well below an optimal biomass of about 1.5 -1.75 million tonnes, calculated from expected MSY of 300 000 to 350 000 tonnes using a fishing mortality of 0.2 (Namibia 1991a). As a result of too great an expansion of processing plant capacity, there is considerable economic pressure to keep up the supply of fish to the plants and to ignore the biological need to cut the catch. Consequently, decisions have been made during the period of downturn in biomass which are inconsistent with the precautionary principle. This fishery has not been satisfactorily managed.

1.1.3 Management of the Cape horse mackerel

Ten hydro-acoustic surveys of the horse mackerel stock were undertaken between 1989 and June 1995. Only four of the ten extended into Angolan waters. Biomass estimates from these ranged between 1 million and 2.1 million tonnes in Namibian waters and between 60 000 and 700 000 tonnes in Angolan waters (Lehmensiek 1996, p1). Although the decrease in the biomass based on data collected until 1995 was noted at the time (Klingelhoeffer 1996), a TAC of 400 000 tonnes for 1996 was recommended and implemented. This was justified on the basis that these stocks have been fished at a high level for about 20 years and that the stock seemed to be in a steady state at around 1.5 million tonnes during the three previous years of environmental perturbation (see Figure 21); in addition, there were signs of above average recruitment to the stock and the TACs had been set quite conservatively since independence (ibid., p6).

The June 1996 survey, however, showed that the biomass had dropped to 1 million tonnes, that about 70% of the stock were juveniles instead of the usual 30%, that sexual maturity of the species was occurring at 19cm compared to 22cm during the 1980s and that the mean length of the fish caught in

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[28] It is shown below in section 5.1 that the price difference between the smallest and largest sizes of hake between 1994-1996 were as much as 107%.

the mid-water trawl were smaller, which signalled that the stock could be under stress. Speculation among scientists was that it was possible that part of the adult portion of the stock had migrated into South African waters as good stocks of larger horse mackerel were being detected in South African west coast waters (personal communication, Klingelhoeffer, October 1996). A large number of smaller individual fish made up the biomass. As a result, a lower TAC of 250 000 tonnes was provisionally set for 1997 (Fild 1996), subject to review during the 1997 season.

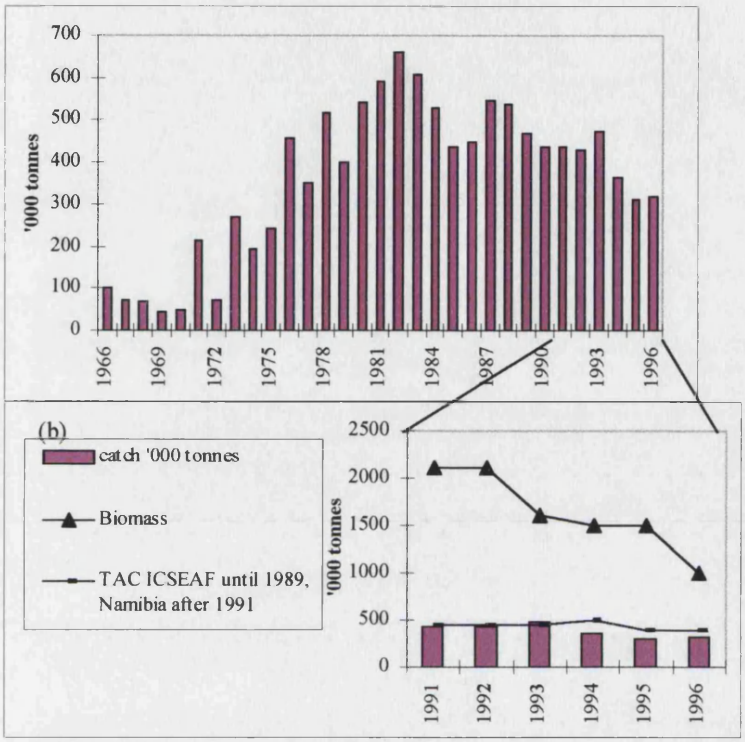

Figure 21: (a)historic catch of horse mackerel; source: ICSEAF statistical bulletins; 1990 catch estimated by MFMR in the absence of an available record. (b) Catch, TAC and biomass estimates since 1991. Source: Catch statistics from MFMR; estimates of biomass from Lehmensiek, 1996, p1; Klingelhoeffer, 1996.

Assessment: This stock is being sustainably harvested probably at about its biological optimum level (MSY). The decline in the biomass estimates was readily followed by a precautionary reduction in the TAC. The economics of the sub-sector, discussed below, raises more questions.

1.1.4 A note on Orange Roughy

Although the orange roughy fishery is not yet a major fishery, it appears to be destined to become one.

The biological characteristics of orange roughy were reviewed in Chapter 2. It was mentioned that orange roughy form dense aggregations in predictable locations and, as a result, are very vulnerable to being heavily fished by industry because of ease of capture together with very high economic

value, particularly on the US market. This means potentially high profits for industry. However, orange roughy have an exceptionally long life-cycle: they live for about 100 year and are very slow growing, maturing and recruiting to the fishery only at about the age of 30 years (Clark 1996).

New Zealand has the longest experience of fishing this species and their estimate of natural mortality for orange roughy is 0.045. They have a relatively low reproductive rate and do not spawn every year. Thus longer term sustainable yields are very low in relation to the size of biomass at about 1-2% of virgin biomass with biomass reduced to 30 -50% of virgin biomass (ibid., p2). Thus, even with some knowledge of the fish stock, this type of stock is very vulnerable to over-fishing.

Orange roughy, along with other deep sea species, are not an easy species to study and not much is yet known of the orange roughy stocks available in Namibian waters, including the size of the biomass. Because of the depth at which they are found, to which light does not penetrate, there are no seasonal differences which produce the rings on the otholith used for ageing in many other species, in much the same way as it is possible to age a tree. The approach to assessing the stock thus depends heavily on the experience gained in other orange roughy fisheries. These too are not very long established as the technology required to fish these stocks successfully has only become available in relatively recent years.

However, the management of the stock has made a promising start. The decision was made to approach management of this stock using 'adaptive management' techniques (Kendall 1984; Hilborn and Sibert 1988). This would involve dividing the known fishing grounds into separate areas, placing all but one under a very conservative fishing regime but using the one area in order to probe experimentally the productivity of the stock in that area.

The intention was to allow only three companies initially to fish for orange roughy but, because of the large numbers that made applications, the number of companies granted rights of exploitation was increased to five, two of which would only be granted quotas once the size of the stock was better assessed (Moyo 1997a).

1.2 The minor fisheries

1.2.1 Rock Lobster

The historic catch for rock lobster was reviewed in Chapter Two; like most other commercial species in Namibia, it reflected the collapse of the catch which is now at an all time low (see Figure 22). As this species has a long life cycle, the recovery of the stock is expected to be very gradual (Grobler 1994, p94). The 1991 White Paper on the fisheries sector (Namibia 1991a, p46) recognised that the

rock lobster stock was in a depleted state, that fishing effort would need to be restricted and that there was excess fleet and processing capacity.

TACs had been set extremely high in relation to biomass prior to independence and the actual catch was falling well short of the TAC. Although the TAC was reduced considerably in 1991, the first full year after independence, it remained high at 1200 tonnes and well above the catch of 375 tonnes achieved for that year. Thus the MFMR acted on recommendations made to it by the Ministry's scientists and reduced the TAC for 1992 to 100 tonnes.

The legal size at which rock lobster may be caught in Namibian waters is of a carapace length (the length of the main part of the body from the eyes to the beginning of the tail) greater than 65mm. The lobster fishery is thus based mainly on legal size males as the growth rates of females decline drastically within the size range 55-67mm carapace length (Grobler 1996, p2); relatively few females are of a size where they may legally be caught. As part of a longer term research project undertaken in 1992 by MFMR scientists, it was established that, using standard rock lobster traps used by the industry, the experimental catch at all of the fishing grounds consisted mainly of undersized rock lobster while at a marine reserve at Ichaboe Island, the rock lobster caught were above the legal size (Grobler , 1992). This indicated high levels of over-fishing and has led to the active encouragement of trap modifications to permit greater levels of escape by undersize rock lobsters (Haufiku 1996).

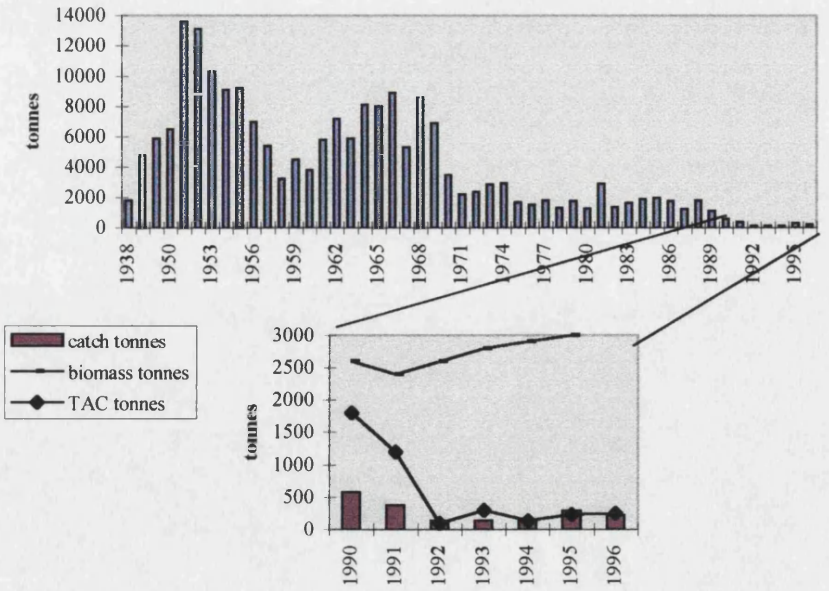

Figure 22: (a) The historic catch of rock lobster in Namibia. (b) the biomass estimates, TAC and catch of rock lobster since 1990. Source: data from fisheries database, MFMR.

Assessment: From a biological perspective the Ministry appears to be managing the fishery well, with a gradual improvement in the size of the biomass and an increase in the number of legally sized males being recorded (MFMR 1996, p6). The optimal size of the biomass and catch based upon it will only be reached after several years of careful and conservative management.

1.2.2 Deep Sea Red Crab

The deep sea red crab stock, caught off the Namibian coast since 1973 by Japanese vessels, has had a biomass of between 12 000 and 15000 tonnes during the 1990s, about 40% of the biomass in the early 1980s (Boyer and le Roux, p7). Boyer and le Roux note that the biomass has remained fairly constant between 1991 and 1995, with no substantial increase or decrease and that recruitment has been consistently low during this period compared to the 1980s (ibid.). They observe that if recruitment does not improve then the stock is not likely to return to the levels of the 1980s.

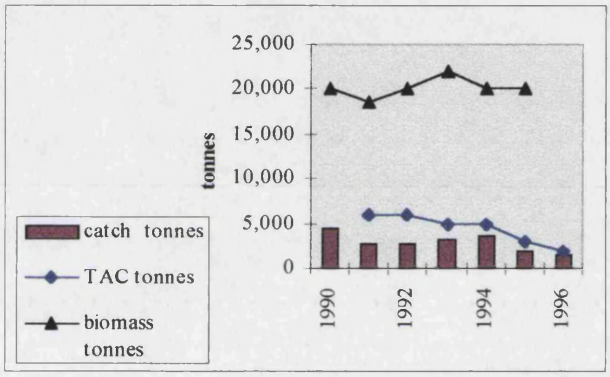

Figure 23: Post independence TAC, catch, and biomass of deep sea red crab . Source of data: le Roux 1996, p5.

Figure 23 juxtaposes biomass estimates, TAC and catch for the post-independence period. With the increase in understanding of the stock by MFMR scientists, they have recommended a lowering of the TAC and management has followed that recommendation. The TAC was reduced from the first TAC of 6 000 tonnes set in 1991 (MFMR1995a) to 2 000 tonnes set for 1996 (MFMR 1995b). Effort directed at the species has also been limited since independence so that the actual catch was 65% of the TAC in 1993 and 73.5% in 1994 (MFMR 1995a, p35).

As a result of a tag-recapture project undertaken by MFMR scientists, it was recently discovered that there is a significant migration of deep sea crab over hundreds of kilometres from Namibian waters into Angolan waters (le Roux 1996, p7). This again illustrates the relative ignorance about the biological characteristics and behaviour patterns even of commercially exploited stocks and of the importance of managing stocks on an ecosystem wide basis, necessitating transboundary management of the stocks.

Assessment: The decline of this stock over many years appears to have been halted. The stock is at a sub-optimal level but appears on course to be effectively rebuilt.

1.2.3 Tuna

It was noted in Chapter 2 that the two main species of tuna caught in Namibian waters are albacore and bigeye. The Namibian government began licensing tuna vessels in 1991 but has not introduced a quota system for the fishery. This is largely because they are highly migratory species and the Namibian catch is only about 5% of the total albacore catch and 1% of the total bigeye catch of these stocks which range across the Atlantic. The catch in Namibian waters alone is currently not very significant in terms of conservation. TACs and quotas have not been set for these species in Namibian waters but effort has been limited through the licensing of vessels.

Namibia has not joined the International Convention for the Conservation of Atlantic Tuna (ICCAT), the regional organisation established to manage Atlantic tuna stocks, due to relatively high fees in relation to the value of tuna being caught in Namibian waters. It does have observer status, however, and co-operates with the organisation (Clark 1994).

The available data do not give a comprehensive picture of the tuna catch in what are now Namibian waters before independence, although it is known that the albacore stocks were fished around the Trip sea mount prior to independence (Penney 1993, p10). The post independence catch of tuna off Namibia (Figure 24) does not represent a new fishery in Namibian waters.

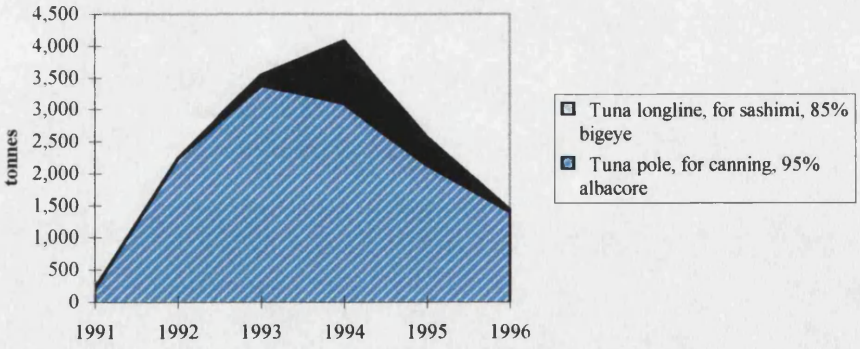

Figure 24: tuna catch in Namibian waters. Source: data from Basemod, Central Statistical Office/ MFMR.

However, catches of south Atlantic albacore for several years have markedly exceeded the maximum sustainable yield (MSY), estimated at about 23 000 tonnes, so that the stock has become seriously depleted (Punt et al., 1994, p5). Most of the catch is taken by the Taiwanese longline fleet. Punt et

al calculate that an unchanged level of harvesting will lead to "virtual extinction of the resource by the end of the decade" (ibid., p8). They recommend that the total catch be reduced to a maximum of 18 000 tonnes in order to give the resource an opportunity to survive (ibid., p9). This offers an illustration of the serious depletion being suffered by highly migratory species and straddling stocks, the subject of the 1996 Agreement on Highly Migratory Stocks and Straddling Stocks, reached within the context of the United Nations Convention on the Law of the Sea (see Ch. 3).

According to the ICCAT Reports, in recent years the bigeye catch for the Atlantic has been at the level of, or slightly over, the estimated 69 500 tonnes MSY. Japanese vessels take 60-70% of the total catch (ibid.).

Assessment: A collective responsibility falls to all states fishing a highly migratory resource, such as tuna, and, in that sense, the Namibian state shares responsibility for the overfishing that is taking place regarding these stocks. Collective action has been agreed upon, in the form of the Straddling Stocks and Highly Migratory Species Agreement (A/Conf.164/33)[29] which is still to be implemented. This ought to improve the management of these stocks by providing an agreed framework within which states may tackle the problem. Primary moral responsibility for the stocks should rest with the Taiwanese fleet in the case of albacore which dominates the fishery. The relatively small proportion of the overall tuna catch for which Namibia is responsible means that it does not carry primary responsibility for the management of these tuna stocks.

1.3 Drawing the evidence together

There is little doubt that attaining optimal, sustainable use of fisheries resources remains a primary objective of the MFMR and the Namibian Government as a whole. Many decisions have been made which have positively contributed to attaining that objective. The enhancement of scientific research of the fish stocks, seeking and utilising the services of foreign expertise and many of the decisions of Government relating to the management of the fisheries, indicate the commitment of Government to that objective. Many of the decisions made to attain long term optimality involved making drastic cuts in TAC in the face of considerable social and economic pressures, indicating a strong state in the Myrdal sense of a readiness to insist on implementation of policy. However, some of the decisions that have been made have been detrimental to that objective and have set back the fishery considerably.

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[29] Discussed in Chapter 5, 2.2.1.

Had the Benguela ecosystem not experienced a severe environmental perturbation between 1993 and 1995 there may well have been unequivocal praise for the management of the fisheries. It is often the case that when environmental factors favourable to the growth of the fish stocks exist, the result is ascribed primarily to good fisheries management. When an environmental perturbation occurs, such as the warm water event off the Namibian coast, then the emphasis is put on environmental factors as being responsible for the setback in the growth of the fisheries. Reality is a little more complex and has exposed faults which, if corrected, would improve the long term productivity and efficiency of the fisheries sector.

These issues focus mainly on uncertainty about species behaviour and stock levels and impact of the variability of the ecosystem. Making decisions detrimental to the future of the stocks arises mainly from the economic and social factors surrounding the fisheries.

2. Dealing with uncertainty and the precautionary principle

At the heart of the problem of sustainably and optimally managing the fisheries is uncertainty. Management decisions relating to fisheries involve considerable uncertainty which may be divided broadly into uncertainty relating to biological characteristics and behaviour of specific stocks of fish and, linked to this, uncertainty relating to the dynamics of the ecosystem of which the fish stocks are part.

2.1 Uncertainty relating to specific species

The marine sciences tend not to be as developed as the natural sciences relating to terrestrial species largely because of the far greater difficulty in observing marine species. The uncertainty relates to issues that are fundamental to the decisions being made and are not incidental to them. Examples from the Namibian fisheries illustrate the problem:

1. There is uncertainty over the extent to which Namibia's pilchard stocks migrate to unidentified areas where more favourable environmental conditions exist or experience high mortality rates as a result of environmental perturbations. This doubt played a part in the decisions that the fisheries management made relating to the 40 000 tonne pilchard TAC for 1995 and 20 000 tonnes TAC for 1996.

2. There was some speculation among scientists that it was possible that part of the adult portion of the horse mackerel stock had migrated into South African waters in 1996 as good stocks of larger horse mackerel were being detected in those waters (personal communication, Klingelhoeffer, October 1996). A large number of individual fish, though small, made up the horse mackerel

biomass with it being left unexplained as to what had happened to the adult stock that had spawned them. This was the reverse of what was the case in 1995 when about 70% of the stock were adults and 30% juveniles (ibid.).

3. Great uncertainty often also exists over the size of the biomass of various species. Various methods of assessing the size of the biomass exist, all of them involving a degree of estimation. These may either over or under estimate the size of the biomass, commonly by 30% to 50% each way (Kesteven 1995, p247).

The uncertainty that may surround the size of the biomass emerged through a debate between MFMR scientists, and scientific consultants employed by the industry regarding the size of the hake biomass. MFMR scientists argued that the fishable biomass in February 1996 was about 380 000 tonnes, a little improved on the previous year. This was based on sweep area surveys and analysis of catch and effort data from the commercial fleet. In contrast, consultants for the industry contended that the fishable biomass was in fact between 2 million and 3.5 million tonnes and that "TAC levels in excess of 200 000 tonnes are therefore advised" (OLRAC et al 1996, p5). The report of some 16 000 words produced by scientists acting as consultants for the industry was a serious challenge to the Ministry's scientists. The MFMR scientists responded to the challenge by demonstrating that the surplus production model used by the industry could not produce acceptable results in this instance because it relied on dubious historical data produced by ICSEAF (Voges 1996) and contradicted evidence available from the sweep area surveys. In the event, the hake TAC was set at 150 000 tonnes for 1996, twice the level of 75 000 tonnes recommended by the MFMR scientists for optimal stock recovery.

This debate demonstrates the ease with which the uncertainties regarding stock assessment and stock dynamics can be used to push up TACs and underlines the importance of the precautionary principle in the decision making process.

The two TACs for 1996 recommended by the Ministry's scientists but not implemented by the Ministry, those for pilchard and hake, were rejected due to strong alternative proposals prepared by consultants employed by the industry (Boyer and le Roux 1996). Boyer points out that, despite serious scientific weaknesses in these alternative submissions, they cast sufficient doubt on the results produced by the Ministry's scientists for management to opt for either deferring a decision on the TAC pending further research or maintaining the status quo.

Perhaps the more important factor was the fact that 4714 people were employed in the pelagic fishery and 3502 in the hake demersal fishery out of the 10337 employed in the fishing industry in

1994, in total some 79.5% of those employed in the fisheries sector (MFMR/CSO Basemod). The political and economic repercussions of a large proportion of these people being laid off led management to make the decision to accept more readily an optimistic view of the state of the stock rather than a more precautionary assessment. Thus the management decided to risk the recovery of the fish stock rather than the certainty of substantial job losses in the industry. This problem will be returned to in 2.2 below.

4. The migratory behaviour of deep sea crab was not known until recently but the discovery, through the tagging programme, that the species migrates several hundred kilometres into Angolan waters has important implications for management of the species. The need for co-ordinated management with Angola is again emphasised.

These examples of uncertainty about the size of the biomass of fish species and their biological characteristics can easily lead to errors in the management of stocks. Where doubt exists as to how large the biomass is, there is a tendency to rely on the more optimistic assessments about it, particularly in the face of serious economic loss or a setback for a social objective such as the provision of employment. All the examples touch on quite fundamental characteristics of the specific species discussed and illustrate how little is really known of them. This is exacerbated by the variable character of the ecosystem.

2.2 Uncertainty over the functioning of the ecosystem

Close consideration of the fate of various stocks makes it very evident that managing the fish stocks through environmental perturbations is the acid test of good management. Creating the economic environment that will enable management to respond appropriately to the demands of the ecosystem is critical to managing the fisheries successfully. The measure ought not to be the extent to which the biomass has fallen during such events or risen during favourable environmental periods. Even with a complete cessation of all fishing during such periods, the biomass is going to decrease.

It is significant that the biomass of all Namibia's major stocks declined during the period after 1992. It would seem that they were all affected either directly, though changes in the marine environment such as sea surface temperature, salinity levels or oxygen levels, or indirectly, as a result of a decline in the availability of the stocks on which these species prey.

The importance of environmental variations is well illustrated in the case of pilchard. Fluctuations in biomass of Namibia's pilchard stocks are largely due to environmental variability. Seabird populations have been shown to vary according to the availability of pelagic fish (Field 1980, p459). A study of the records of guano deposits off the southern African west coast over an 80 year period

suggests that pelagic populations varied tenfold naturally before the start of pelagic fishing in 1943 (Crawford and Shelton 1978).

While it is true that the main cause of the decline in biomass in the present period has been environmental conditions, it is also true that fishing has a dramatic effect on the chances of revival of a stock. If the stock has been depleted by poor environmental conditions, to then remove a large portion of the remaining stock clearly diminishes to chances of the stock surviving. A biomass of eleven million tonnes, as it was estimated to have been in the mid-1960s, being reduced to one tenth of its size, that is, 1.1 million tonnes, still leaves a considerably larger biomass from which the stock may recover than has been available in recent years. The 1996 biomass was estimated to be less than 1% of that mass. For two decades there has been too small a biomass at the time of an environmental perturbation for the stock to recover when more favourable conditions return.

The important issue is how management responds during a warm water event and whether the fish stocks are given the maximum opportunity to recover when more favourable environmental conditions return.

2.3 Scientific data and decision making

The disastrous process of increasing the pilchard TAC when the biomass of the stock was decreasing is in part explained by the decision making process about the TAC linked to acknowledged ill-advised decisions interpreting scientific data on the part of the Ministry and in part by a readiness to take risks with the resource instead of adhering to the precautionary principle due to economic and social pressure to do so.

In a relatively short-lived species like pilchard, there can be a high mortality rate in relation to the size of population and, consequently, there is the potential of high variability of stock size. This is particularly true of the juvenile part of the stock.

The stock biomass had been assessed in September each year and on this basis a TAC recommendation for the following year was made to the Fisheries Advisory Council at its October meeting. The Fisheries Advisory Council (FAC) in turn advises the Ministry on the TAC (Ch. 6, 4.7). The problem was that by the time the fishing season starts at the beginning of April the following year, the fishable biomass could be vastly different from that predicted.

High mortality rates for juveniles, which shoal separately before they recruit to the main stock, may mean that the number of fish in the cohort could be reduced by between 20% and 80% by the beginning of the fishing season (Boyer and Almeida1994, p12). If normal growth is assumed, the actual biomass of the cohort could increase by 90% or decrease by 75% (ibid., p12). When the recommendations for the 1994 TAC were made in 1993, it was based on both the biomass of the adult part of the stock and the juvenile cohort which was expected to recruit to the fishable part of the stock by the end of the first quarter of 1994. In the event, due to the environmental perturbation experienced at the time, the pilchard suffered particularly high mortality rates and the juvenile cohort did not recruit to the stock. The TAC actually rose from 80 000 tonnes in 1992 to 125 000 tonnes in 1994 while the stock declined dramatically.

Scientists employed by the Ministry of Fisheries and Marine Resources recommended that a change be made to the way in which the TAC was decided upon for pilchard. An initial TAC should be set in October each year based on the biomass of the adult stock, with an additional TAC decided upon in late March the following year based on whether the juvenile cohort had actually recruited to the main stock. This proposal was accepted and has become the process by which the TAC is now set, demonstrating a readiness by the Ministry to learn and adapt methods and procedures to improve management of stocks.

3. Economic risk and risking the species

MFMR scientists also recommended that there be a complete moratorium on pilchard fishing for 1995 and that the Namibian pilchard TAC should be reduced by the size of the pilchard catch made in Angolan waters.

In the event, fear of widespread job losses in the industry and intense pressure from fishing companies persuaded the MFMR to set a TAC of 35 000 tonnes, later increased to 40 000 tonnes for 1995. The real disaster came when, in addition to a catch of over 42 000 tonnes in Namibian waters in 1995, a further 45 000 tonnes were caught by the Namibian fleet in Angolan waters, where most of the remaining stocks had migrated. The Angolan Government had issued licences for the fleet to do so.

Again, for 1996, the Ministry's scientists advised that there should be a complete moratorium on pilchard fishing for that year. This time the Ministry set a TAC of 20 000 tonnes, again for short term economic reasons. This decision was clearly inconsistent with such a low biomass and the need to rebuild the stock.

Political and social pressure, particularly relating to the threat of widespread unemployment, resulted in the most optimistic gloss being put on the scientific assessments given to the Ministry management by scientists from the Ministry. The two fisheries in which employment of Namibians is highest and in which investment has been greatest are the pilchard and the hake fisheries. It is only in these two cases that the management has not implemented the recommendations of the scientists. Overcapacity in the industry produces the pressure on the management of the fishery not to decrease the TAC when environmental conditions so demand. Overcapacity also absorbs resource rent and results, as it was shown in the bioeconomic model in Chapter 3, from the availability of that rent in the fishery.

4. Growth of overcapacity

Capacity has grown beyond the industry's needs in both the harvesting and processing sides of the industry.

4.1 The oversized fleet

Classes of vessels and their annualised catching capacity were calculated by the Namibian Economic Policy Research Unit (NEPRU) in a study commissioned by the MFMR (Moorsom 1994). Using industry data held by the Ministry, the fleet was divided into the different fisheries and classes of vessels, defined using different criteria for different fisheries. For the bottom trawl fishery, the horse power of the main engine was used for hake freezer trawlers, wet fish trawlers and for the longline vessels. Length of vessel was used for the small trawlers in the hake/monk fishery. The capacity of the hold was seen as a more useful criterion for the defining the classes of vessel in the pelagic sector. Horse power of the main engine was also used as the criteria in the mid-water trawl which targets horse mackerel[30].

Historic catch statistics were used to calculate an annualised catch capacity for each class of vessel. As this is dependent on reported catch, checked at port by fisheries inspectors, it would not take account of any dumping that might be taking place and, therefore, would bias the data towards a relatively low estimate of catching capacity. Catch also depends on a whole range of other factors such as environmental conditions, the skill of the skipper and the range of electronic equipment carried on the vessel. These measures thus offer no more than a rough indication of catching capacity of the fleets.

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[30] For greater detail of methodology see Moorsom 1994.

Using the vessel classes and the catch capacity for each class produced by NEPRU, data was extracted from the Register of Fishing Vessels held by the Ministry of Fisheries and Marine Resource for 1994, 1995 and 1996. The present fleet was divided into classes according to the criteria developed by Moorsom and aggregate catch capacity for each class was calculated in order to examine the growth in the capacity of the fleet. The results are summarised in the tables below.

4.1.1 The bottom trawl fleet

Table 6 summarises catch capacity for vessels in the hake fleet.

	Vessel catch	1994		1995		1996	
horse power of main engine	capacity tonnes p.a.	no. of vessels	catch capacity tonnes p.a.	no. of vessels	catch capacity tonnes p.a.	no. of vessels	catch capacity tonnes p.a.
hake FT(1)800-1499	3500	9	31500	8	28000	7	31500
1500-1999	5000	5	25000	3	15000	6	30000
2000-2499	7000	2	14000	4	21000	7	49000
2500+	9000	3	27000	7	63000	4	36000
total			97500		127000		146500
hake WF 300-699	1100	26	28600	23	25300	22	24200
700-1399	2200	6	13200	6	13200	13	28600
1400-2000	3300	10	33000	15	49500	14	46200
total			74800		88000		99000
hake LL 800-1499	800	12	9600	19	15200	18	14400
TOTAL HAKE			**180400**		**230200**		**259900**

Table 6: The hake fleet comprised of freezer trawlers (FT), wet fish vessels (WF) and longliners (LL). Source: vessel capacity pa and vessel class definitions (Moorsom 1994). Data on vessels extracted from Register of Vessels, MFMR, Windhoek.

Between 1994 and 1996 the freezer trawler fleet targeting hake expanded from a capacity of 97500 tonnes to 146500 tonnes per annum. The number of vessels grew from 19 to 24 with a slight decrease in the smallest class of vessel in favour of larger vessels. This represented a percentage increase in capacity between 1994 and 1996 of 52%.

During the same period the capacity of the hake wet fish fleet grew from 74 800 tonnes to 99000 tonnes, an increase of 32%. Again, there was a slight decrease in the number of smaller vessels and an increase in the number of larger vessels.

The capacity of the long line fleet targeting hake grew from 9600 tonnes in 1994 to 14400 in 1996, a 50% increase in capacity.

Overall, the capacity in the hake fishery grew from 180400 tonnes to 259 900 tonnes between 1994 and 1996, that is by 44.1%. Note that this capacity only takes account of licensed vessels and does

not take into consideration any fishing vessels that a fishing company may own which are not licensed to fish in Namibian waters.

From the above analyses it becomes clear that overcapacity in the hake fleet is the cause of greatest concern. If the biomass of hake varies due to environmental perturbation and if, during a warm water event, the stock dips to half of its previous biomass and rebuilding over several years to its maximum value once again, then the fleet size that is likely to be found optimal would be one capable of harvesting a catch part way between the maximum and minimum depending on the period during which the stock is expected to be at different levels. This needs also to be taken into consideration in deciding on an optimal level of capacity.

4.1.2 The purse-seiner fleet

Similarly, there appears to be overcapacity in the purse seine fleet, targeting mainly pilchard, the data for which are summarised in Table 7 below.

purse seiners hold capacity in tonnes	catch capacity in tonnes pa	no. of vessels	catch capacity of class in tonnes pa
100-199	3000	13	39000
200-349	4200	12	50400
350-499	5400	5	27000
450-599	6600	8	52800
600+	8600	4	34400
total			**203600**

Table 7: Capacity of the purse seine fleet. Source: vessel capacity pa and vessel class definitions (Moorsom 1994). Data on vessels extracted from Register of Vessels, MFMR, Windhoek.

Classes in the pelagic sector were defined in terms of hold capacity. As the hold capacity of vessels is not given in the register of licensed fishing vessels, the 1992 data used in Moorsom's analysis were used (Moorsom 1994). Between 1994 and 1996 there was little change in the pelagic fleet. Three small vessels and two larger class vessels in the fleet in 1994 were not licensed in 1996 but there were an additional three larger class vessels in the fleet by 1996. Thus it appears that the capacity of the fleet has remained roughly the same in 1996 as it was in 1994. The pelagic fleet during this period had a capacity of 203600 tonnes.

This fleet capacity would have been about right for the TACs set for the pelagic industry in 1994 when the pilchard TAC was 125 000 tonnes and the pelagic part of the TAC for horse mackerel, caught as juveniles before recruitment, was 90 000 tonnes. In 1996 the pilchard TAC was set at 20 000 tonnes and the pelagic part of the horse mackerel TAC was set at 90 000 tonnes which meant that the fleet capacity was well in excess of requirements. Two issues need to be raised: although horse mackerel has been caught in the pelagic fishery for many years, it means removing from the

stock many more individuals than would be the case if caught in the mid-water trawl for the same tonnage as they are caught as juveniles in the pre-recruitment phase of their life cycles. This has been done to some extent in order to provide an additional target species to the pelagic fleet and so helps to understate the extent of the over-capacity for the pelagic sub-sector. On the other hand, it is a practical way of resolving a problem which might have been better avoided but nevertheless exists.

This raises the second issue: the optimal size fleet for a highly variable stock, even if it were fully recovered, would not be at a level needed to catch the highest TAC over a several year period. It needs to be set at a level where it would be expected to optimise use of the resource in the long term at lowest cost.

4.1.3 The horse mackerel fleet

Data for the **horse mackerel** fleet is summarised in Table 8 below.

		1994		1995		1996	
horse power of main engine	**vessel capacity tonnes pa**	**no. of vessels**	**catch for vessel class tonnes pa**	**no. of vessels**	**catch for vessel class tonnes pa**	**No. of vessels**	**catch for vessel class tonnes pa**
1000-2500	8000	6	48000	6	48000	5	40000
3800-4000	12000	5	60000	5	60000	9	108000
5000-5300	14000	8	120000	8	120000	7	112000
7000+	17500	17	297500	17	297500	8	140000
total		36	525500	36	525500	29	**400000**

Table 8: Horse mackerel fleet: Source: vessel capacity pa and vessel class definitions (Moorsom 1994). Data on vessels extracted from Register of Vessels, MFMR, Windhoek.

This table uses data for the former Soviet fleet and reflects a decline in the number of vessels operating in Namibia's mid-water trawl. The catching capacity of the fleet has declined with the number of vessels involved. Just after Namibia's independence some 52 of these vessels operated in this fishery. Their number had fallen to 29 in 1996 but the remaining vessels had more than sufficient capacity to catch the TAC of 310 000 tonnes allocated for the mid-water trawl in 1996.

Significantly a Dutch trawler, the Tetman Hette, was brought in by the Namibian company TNP fishing in 1995 on an experimental basis. This vessel, operating with a crew of 33, about one third of the crew of a large Russian trawler, was catching up to 1800 tonnes per three week period, with an estimated annual catch capacity of about 30000 tonnes (Visser 1995). Yet the vessel only needed to trawl for one to two hours per day in order to catch what they were able to process and freeze on board in 24 hours (ibid.). The operators of this vessel believed that what was needed was a mid-water freezer trawler with a freezing capacity of 250 to 300 tonnes of horse mackerel per day and a 4000 tonne hold capacity (ibid.) but costing US$30m each (Anon. 1995). Vessels such as these

would have a capacity of about 75000 tonnes per year fishing for 250 days per year. This would mean that five of these vessels could take the entire mid-water catch.

Assessment: Capacity of the fleet has been examined in the three largest fisheries. The most serious problem of overcapacity exists in the bottom trawl fishery targeting hake where fishing effort has grown by 52% between 1994 - 1996. The capacity was 73% above what was needed to catch the TAC set for 1996 and 243% above what was needed to catch the TAC recommended by the scientists for 1996.

The purse-seiner fleet did not grow during this period and the fleet is largely that which has been in Namibian waters for some years. It was, however, 63% larger than needed for the largest pilchard TAC since independence in 1990 and more than 10 times the size of what was needed to catch the TAC set for 1996. Some of this capacity was used in targeting juvenile horse mackerel for reduction to fishmeal and oil because of the poor state of the pelagic stocks. For a highly variable species it is expected that an optimal size fleet will be partly idle during years when the stocks are very low, but that the optimal size of the fleet will be lower than that needed to harvest the stock when it is relatively high.

The mid-water trawl fleet, targeting horse mackerel, the lowest value species among Namibia's major stocks, has fallen in size. It would appear that under market conditions prevailing during this period and the cost structure of the fleet, relatively little rent was available to the sub-sector, discouraging growth beyond the level of effort needed to harvest this stock.

4.2 Excess processing capacity

There exists sufficient hake processing capacity, based on two shifts per day, to handle two to three times the hake wet fish TAC for 1996 (Clark 1996), that is sufficient to process the entire wet fish catch when the biomass is again restored to its optimum if the wet fish proportion of the total TAC remains the same.

An UNIDO report on Namibia's fishing industry, estimated that the canning and reduction plants for pilchard were sufficient to process the entire catch if the pilchard stock were to be restored to a optimal level where a TAC of about 400 000 tonnes could be set (UNIDO 1992, p72).

Apart from a fish drying plant designed to handle 7500 tonnes of fish a year, there are no onshore processing facilities for horse mackerel. The catch is frozen on board or reduced to fishmeal on board the factory trawlers.

5. Rents:

The data available for the industry are not adequate for use in calculating the resource rents by species in a conventional manner. This is due to the absence of reasonably reliable and sufficiently detailed data on costs, value added and final product prices. An annual survey of the industry was instituted in 1994, as a means of systematically collecting detailed data on the industry. Approximately 70% of the companies responded in the first year but this was not a representative sample of the industry. The results of the 1995 survey are not yet available[31]. In recent work being undertaken for Natural Resource Accounting project[32], G.M. Lange and D.J. Motinga, have estimated that only about 30% of excess profits in Namibia's fishing industry as a whole are captured through quota levies (Lange and Motinga 1997, p20).

An alternative method is attempted to approximate resource rent. Although quotas are strictly not transferable, unless with the permission of the Minister, each year quotas for the year are sold by small companies, which do not have vessels, to larger companies with vessels and processing plants. This quota market is quite secretive, not offering the attributes of a free market. The sale of the quota is couched in terms of chartering of a vessel but in reality the quota is passed on to the larger company for a sum of money and the quota from then on is treated as if it is the purchaser company's property.

The price per tonne for which quota is sold/leased annually could serve as a basis for calculating resource rent that has not yet been dissipated in other ways and not collected by the Government, if one assumes that the bigger companies buying the quota are at least making normal profits out of it.

In 1995 and 1996 up to N$850 a tonne was being paid for hake quota for freezing at sea. This represents a minimum resource rent per tonne for hake which has not been dissipated in some way or collected by government. The price being paid for quota for wet fish vessels was about N$350; the difference between frozen-at-sea price and the wet-fish price seems largely to represent the premium being paid for processing on land. The government has insisted on this policy of landing more and more wet fish for processing on land for purposes of creating more jobs. The difference, thus, should largely be considered as rent spent on subsidising onshore jobs in the fishing industry. There would be a small proportion of this amount attributable to a market preference for product frozen at sea. Thus potential rent is being used as a subsidy for the creation of extra jobs. If this expenditure of

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[31] Note Ch1, 5.3.3 for difficulties that exist with this survey.

[32] This is an ongoing project undertaken for the Directorate of Environmental Affairs, Ministry of Environment and Tourism, Namibia.

resource rent were more explicitly recognised as a subsidy, the question would more readily be raised as to whether expenditure of such large sums could more productively be directed to subsidising jobs in another sector, such as housing construction, or towards the education or health sectors.

The N$850 could be used, therefore, as the basis for calculating the minimum rent accruing to the industry as abnormal profit from the hake freezer trawler portion of the TAC. The quota levy and the research levy represent the portion of the resource rent that is collected by the state, although part of this may be considered payment for management services.

Overcapacity in processing plants and vessels dissipates part of the uncollected rent. Processing plants for the hake fishery, on average, are being used at less than half their potential capacity if two shifts per day are regarded as full capacity (Clark 1996). Thus rent is being dissipated on the financing of excess capacity in plant. Reliable data on the value of processing capacity for the hake sub-sector was not available so that it was not possible to produce a figure for the capital cost of overcapacity.

Some indication can be gained of the value of the resource rent loss in excess capacity of vessels in the hake fishery:

The FAO provides figures for 1988 for new construction of vessels (FAO 1992, p178). These figures are now dated but perhaps are more representative of the Namibian fleet's level of technology than 1997 new vessel prices would be. Capital cost of freezer trawlers of 50m length are given as US$11m and stern trawlers of 35m length are given as US$4.2m, but costs of demersal longliners are not given. To accommodate this, the assumption can be made that all the overcapacity exists in the freezer trawler and stern trawler portion of the fleet targeting hake (see Table 6) which, in any case, take over 90% of the hake catch. Only 4 of the 24 freezer trawlers are less than 50m in length and the mean length of the stern trawlers was just over 35m (MFMR licences) so that these values could be considered quite conservative.

As freezer trawlers took approximately half of the catch in 1996, the freezer trawler capacity was approximately double that which was needed. Thus 12 vessels, valued at US$11m each, had a total capital value of US$132m. If the cost of capital is 15% pa, which is not an unreasonable figure for Namibia, then the cost of that excess capacity is US$19.8m pa. Similarly, the excess capacity of 19 vessels can be established for the wet fish stern trawlers. Valued at US$4.2m each, the capital value of the excess capacity of this portion of the fleet is US$79.8m, generating capital costs of US$11,97m pa. Thus the capital costs annually of overcapacity of the portion of the Namibian fleet

targeting hake is about US$31m or N$133.3m (average exchange rate, SA Reserve Bank Quarterly Bulletins 1996).

Thus, without taking into consideration resource rent dissipation as a result of processing plant overcapacity, it is possible to gain a partial approximation of the resource rent loss in the in the hake sub-sector. The loss of potential resource rent is summarised in Table 9 below:

	N$ millions
Abnormal profits: ½ TAC for freezer trawlers: 75 000 tonnes at N$850/tonne	63.75
½ TAC for wet fish trawlers: 75000 tonnes at N$350/tonne	26.25
Rent directed to job creation: 75 000 tonnes at N$500/tonne	37.00
cost of capital of excess capacity in the fleet	133.30
cost of capital of excess capacity in processing sector	?
Total	**260.3** plus cost of excess processing capacity

Table 9: Estimation of resource rent in the hake sub-sector not collected by Government. Data Basemod, interviews with industry, FAO 1992, SA Reserve Bank Quarterly Bulletins.

To put it in perspective, this sum of N$260.3 million alone is 54% of the national health budget of N$480.662m for 1995/6 (Namibia 1995)!

It should be noted that the optimal size of a fleet targeting a variable stock will be lower than what is required to harvest the stock in good years. The above calculation of fleet size does not take this into account and is meant only to give substance to the argument that the resource rent not being collected by the Government in the fisheries sector is substantial.

A similar exercise may be undertaken with horse mackerel but this sub-sector is even more complex in the sense that it is less monetised. The sub-sector operates on a bartering basis. There are three companies that collect quota and then do deals with the remnants of the former Soviet fleet, made up of the big 'super-Atlantik' class vessels, which have a reputation for being very heavy on fuel consumption. The quota holders in 1995 were receiving N$15 per tonne from the intermediaries for horse mackerel quota. The horse mackerel TAC of 400000 tonnes in 1995 had associated with it a minimum resource rent of about N$60m. This sum could serve as a minimum uncollected resource rent accruing to the quota holders. However, because of the extremely low wages paid to Russian seaman (US$75 per month) and because it seems as if they are running these vessels down and thus doing minimal maintenance work on them, they were able to compete successfully with any other vessel. The arrangement was then that these land based companies would arrange everything that the vessel needed, including the US dollar pay packets and supplies, and, in return, they would receive part of the catch. Clearly this makes calculations extremely difficult and even rougher than they are for hake. In the case of horse mackerel there has not been much investment onshore in plant.

The viability of these vessels rests on the price for which the horse mackerel can be sold. In 1995 the Russian vessels were selling horse mackerel in frozen blocks in West Africa for about US$250-280 per tonne. TNP Fishing, however, opted to open the southern African market and began selling frozen horse mackerel to Zimbabwe at about US$340 per tonne. While the Russian vessels contributed very little to the Namibian economy, employing virtually no Namibians and transhipping the catch at outer anchorage off Walvis Bay to avoid harbour fees, TNP Fishing were off-loading fish in Walvis Bay and dispatching about 100 refrigerated trucks each month to Zimbabwe. Landing the fish in Namibia was generating harbour fees, cold storage costs, and the use of other services valued at about N$400 000 per month (Visser 1995).

The position with the third major stock, pilchard, is again quite different. The pelagic industry is controlled by a very tight South African based cartel which operated for years before Namibia's independence (Moorsom 1984a). Federal Marine Ltd is a South African company which has a monopoly of the Southern African canned pilchard market. They have lobbied to keep tariff barriers on canned pilchard high to protect their market. Federal Marine are owned by all the fishing companies in the pelagic sub-sector, including Atlantic Canned Fish Sales (Pty) Ltd. Atlantic Canned Fish Sales, owned by the Namibian companies, was established in 1987 to satisfy a requirement of the South African administration in Namibia that the marketing of Namibian fish should take place from a Namibian base. In practice it continues as did before. None of the Namibian companies have broken out of this arrangement. The agreement is that no company will sell any of its canned fish other than through the cartel (see Appendix A). The entire South African and Namibian production is pooled. The large pelagic fishing companies with canning plants also received quota for their own fleets. The small independent boat owners receive a price fixed per tonne set by the canning companies collectively. There is no auction and no bargaining with individual companies. It has not been possible to establish a proxy for resource rents in a way similar to that for hake and horse mackerel.

It is significant that companies involved in the pelagic sub-sector appear to remain in the industry and solvent, despite the very low TACs being set. The considerable overcapacity in the sub-sector is clearly being financed by substantial uncollected resource rent.

Assessment: In each of the major fisheries is it clear that potential additional resource rent exists, that is not at present being collected by government. In the absence of more detailed and reliable data it is not possible to do more than establish that substantial uncollected resource rent exists in the Namibian fisheries; some of it accrues as abnormal profit, some as financing of excess capacity and

some of it is directed towards employment creation in the industry, although it is not clear that this would be the most beneficial social use of the rent.

5.1 Tracking market prices, tracking rents

The Namibian Government does collect some of the resource rent in the form of quota levies. As resource rents available in a fishery are directly linked to the market price for the species, tracking what has happened to the market price provides a benchmark against which increases or decreases of resource rents may be measured.

Hake prices for headed and gutted product are used here as an example of price movements that have taken place in a two year period between 1994 and 1996. Hake was selected as an example because it is currently the most valuable of Namibia's commercial stocks and because data is available for the market in which 90-95% of Namibia's hake is sold, that of the European Union and predominantly Spain. The quota levies for hake were set in 1991 had have remained the same since then (Stutterford 1993, p334). Table 10 below samples the period between 1994 and 1996.

	1994	**1995**	**1996**
sizes	**ptas* per kg**	**ptas per kg**	**ptas per kg**
250-550gm/pc	160	182	217
550-750	197	221	255
750-1300	246	265	313
av. price range	86	83	96
% difference	53.75%	45.6%	44.2%
average price for the three sizes	201	223	262
price increase, in ptas, since 1994	-	22	61
-% increase since 1994	-	10.95%	30.35%
exchange rate Nam.cents/ptas**	2.66	2.91	3.39
Nam. Dollar average price	5.35	6.49	8.88
price increase, in N$, since 1994	-	1.14	3.53
-% increase since 1994		21%	66%

Table 10: European market prices for hake converted into Namibian dollars. Source: data on prices extracted from Globefish European Fish Price Reports, 1994-1996. FAO. **ptas = Spanish pesetas. **SA Reserve Bank Quarterly Bulletins; Namibian dollar is pegged at parity to SA Rand.

The data for this table were extracted from Globefish European Market Prices (FAO Globefish), published monthly by the FAO. It provides *inter alia* ex-coldstore prices for *merluccius capensis*, a species of hake caught in Namibian waters. It would appear that *merluccius capensis* and

merluccius paradoxis are both sold as *merluccius capensis* on the Spanish market where virtually all of Namibia's hake is marketed.

The figures point to the need for far greater detail in marketed product from the Namibian fishing industry to enable proper monitoring to take place. As the fish is sold according to size and product, this breakdown of the figures must be available to be industry and should be made available to be Ministry.

As there is a significant price difference between the different product sizes it is impossible to check the value of product which the Namibian industry is producing without this detail being made available. The three sizes given in the table do not cover all the sizes marketed during this period. They do, however, cover all the main sizes. There were categories <250gm/pc and >1300gm/pc for some months and during the period after December 1995 each of the three sizes in the table were divided into two sizes, thus making 6 sizes in all. In order to make the figures comparable, the relevant pairs of prices were averaged appropriately.

The average price difference per kilogram within this limited size range was between 44% and 53.75% between 1994 and 1996. The price difference per kilogram between categories <250gm/pc and >1300gm/pc, the smallest and largest sizes, was 107% on average during 1994. These price differences could alter considerably the value of the rent associated with the catch.

These prices reflect average prices for headed and gutted hake. The Spanish peseta price rose from an average of 201 pesetas in 1994 to 262 pesetas in 1996, a percentage rise of 30.35%. The Namibian dollar, pegged as it is to the South African Rand, fell against the Spanish peseta during this period from an average for 1994 of 2.66 Namibian cents per peseta to an average of 3.39 cents per peseta for 1996 (South Africa 1995-1997). The average prices for the three sizes given in the table rose, in terms of Namibian dollars, from N$5.35 per Kg for 1994 to N$8.88 per kg for 1996, which represents a 66% increase in the Namibian dollar price. There was a similar movement in the prices for hake fillet (FAO Globefish).

No tariffs are paid for importation of fish products from Namibia into the European Union under the terms of the Lomé Convention and, therefore, do not need to be considered. Freight charges for frozen product from Namibia to Spain remained fairly static at about US$170 per tonne during this period (Herzberg 1995). These price rises should be reflected in the export income from hake in the Namibian industry.

If costs have remained a constant proportion of income or have declined as a proportion of income, the levy should at least have remained a constant proportion of total income from the hake resource.

Imported inputs, such as fuel, rose in price in Namibian dollar terms as a result of the fall of 21% in the US$/N$ exchange rate during this period. The other major component in the industry's costs, the wage bill, has risen by less than the rate of inflation of about 10% (Clark 1996). Thus it would seem that the costs of harvesting the resource should have been a smaller proportion of the revenue at the end of the period than at the beginning. Thus, at least keeping the levy payments for hake the same as a proportion of the total revenue would have been entirely justified.

If the increase in the Namibian Dollar price is used as an index, the basic hake levy of N$800 per tonne should have risen by 66% to N$1328 per tonne. Thus, instead of collecting a greater proportion of the resource rent, the Namibian Government is collecting a smaller proportion of it and a larger proportion of it is accumulating to the industry for financing overcapacity and abnormal profits.

6. Conclusion

This chapter has established three factors which underpin the argument that, despite good intentions, key tests of optimal resource use are not being met.

Firstly, most of Namibia's commercial stocks are well below an optimal level. The only stock which is not overfished is the relatively low value horse mackerel stock and the orange roughy stock of which commercial exploitation began in 1997. The key question then becomes whether the task of restoring the stocks to optimal biomass levels is being successfully undertaken and, if not, whether there are management tasks which ought to be undertaken in order to achieve those objectives. It is evident that decisions have been made that have been detrimental to resource recovery.

Secondly, in the two major fisheries, targeting hake and pilchard, the industry has fallen victim to the process described in Chapter 3 of over-capacity developing, in both vessels and processing plant, to the extent that much of the resource rent is absorbed in financing this excess capacity. The heavy burden of excess capacity has produced conditions where management is faced with a choice of risking the future of the species, by giving the most optimistic interpretation to scientific reports on the state of the stocks, or facing the probable collapse of the industry if it were to implement the precautionary principle and take the necessary, cautious decision on setting, for example, a TAC at zero in the case of pilchard.

This is exacerbated by the variability of the stock, produced in most dramatic form by severe environmental perturbations, through a ratchet effect (Caddy and Gulland 1983). During a succession of years when environmental conditions are favourable towards high productivity, investment in vessels and processing capacity builds up, often to a point where there is even

considerable excess capacity for the high productivity phase. Then the stock collapses as a result of an environmental perturbation, plunging the industry into crisis where government help is sought to prevent complete collapse of the industry and unemployment. Exit from the industry in these circumstances is difficult as there is virtually no alternative use for a fishing fleet, and limited alternative use for processing plants on land. The end result is an industry with excess capacity, creating pressure to over-harvest the resource and absorbing much of the resource rent.

Thirdly, it is evident that there are considerable resource rents being lost to the state through the financing of overcapacity and abnormal profits. This is evident from the trade in quota that takes place in the Namibian fishing industry, the considerable excess capacity that is being carried by the industry and the upward trend in prices that is not matched by any increase in the quota levy.

Chapter Eight

WHO GETS THE FISH CAKE ?

Despite the poor state of many of Namibia's fish stocks, it was established in Chapter 7 that there are resource rents, uncollected by Government, in the Namibian fisheries sector. Much of this rent is now being dissipated on over-capacity in the industry, although it is apparent that some is accumulating as abnormal profits and some is subsidising employment in the industry. It is widely accepted in principal in the mining industry that resource rent, which belongs to the people as a whole, is collected by the state, acting on behalf of the people, to be used for the general good. This is less common in the fishing industry, although it is no less justified.

This chapter examines the second of the two primary objectives of the Namibian Government for the fisheries sector, namely of generating greater benefits for Namibians from the country's fisheries. This includes directing the benefit of the resource rents towards Namibians to whom the resource belongs. The vehicle for achieving this objective, to an extent, has been the use of quota levies, which this thesis supports. In addition, Government has attempted to achieve those objectives by allocating quota to particular companies that have not been in the industry before. Apart from an assessment of managerial and technical competence, these companies were selected on the basis of their Namibian ownership, the extent to which they offered an opportunity to those "who have been socially, economically or educationally disadvantaged by discriminatory laws or practices which have been enacted or practised before the independence of Namibia" (Namibia 1993a, Regulation 2(a)), on the basis of giving regional spread among companies that applied for rights of exploitation in order to promote "regional development within Namibia" (Regulation 2(b)) and by considering what they might contribute to the community from which they were drawn. This was reviewed in Chapter 6.

The criteria used in selecting companies which received a right of exploitation in 1993 were examined in Chapter 6. It was also established that the opportunity which Government intended to offer Namibian companies went beyond the opportunity to establish a business. It also involved an offer of subsidy, in the form of uncollected resource rents, and the opportunity for entrepreneurship, employment creation and, theoretically, an injection of funds into the community from which the

shareholders were drawn. Although there seemed to be some acknowledgement by the MFMR of the subsidy element associated with allocations of rights of exploitation (Angula 1993)[33], they were not administered explicitly and transparently as acknowledged subsidies.

This chapter will first examine the change that took place in formal ownership of the fishing companies benefiting from a right of exploitation and the quota which is associated with such a right, between 1987, when existing rights at the time of independence were granted, and the end of 1993, when the new rights of exploitation were allocated by the MFMR. The significance or otherwise of ownership of these companies is then examined, drawing attention to the means employed by larger enterprises to retain control of a major portion of the benefits of the industry while taking advantage of the levy rebates associated with the company being majority Namibian owned. This establishes that ownership does not guarantee that the company and its shareholders will necessarily receive the benefits of the uncollected resource rents. Ownership does, of course, count if it also involves a significant degree of control over the harvesting, processing and marketing of the resource. Thus the more powerful companies tend to retain the benefits of uncollected resource rents while smaller, less powerful companies tend not to do so but see that resource rent go to more financially and managerially powerful enterprises.

In conclusion, it will be argued that it is considerably more important to ensure that rents go to Namibia and Namibians through collection by the state of a greater proportion of the resource rent, than to focus on the formal ownership of the industry. The most powerful companies in the industry can all too easily establish methods of obtaining the rent from the fisheries if rent remains uncollected. Distributive or re-distributive aspects of fisheries policy are better fulfilled through the collection by the Government of a greater proportion of the resource rents than through attempting to do so through Namibian ownership. Ownership of a fishing company does not ensure that benefit from the resource will necessarily accrue to the owners. The extent to which this may happen depends on the availability to them of plant and equipment, of marketing ability and access, and on the availability of finance, all of which help determine their relative strength in the industry. In many cases in the Namibian industry, newcomer companies have failed, or have been heavily exploited by the established companies, because of their relative lack of power within the industry.

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[33] See quote from a speech by the Minister, Ch. 6, section 4.1.3.

1. The scope of this chapter

Although the focus of this chapter is on who benefits from the resource rent not collected by the state and accruing to companies either as abnormal profits or as financing to cover the costs of excess capacity, it is appropriate to acknowledge again that the Namibian Government does recover management costs involved in running the Ministry of Fisheries and Marine Resources and collects some of the resource rent which makes a net contribution to state revenue from the quota levy alone (Ch 3, p15). A review of fisheries management world-wide shows that this rarely happens (Kaufmann 1997). That said, Namibia potentially has a very rich fisheries resource, particularly in relation to the size of the population, and, therefore, should be expected to earn considerable net revenue for Namibia.

It is intended in this chapter to focus on the particular problem of ownership of the industry in Namibia because of the extent to which ownership was identified by government as a vehicle for the transfer of benefits accruing from fisheries resources. The intention is to investigate the appropriateness or otherwise of doing this.

This should not be taken to suggest that the Namibian Government has taken a position that is antagonistic towards foreign investment. The contrary was shown to be the case in Chapter 1 (2.2), where the array of measures designed to encourage foreign investment were discussed. In addition, the MFMR has made provision for granting rights of exploitation to foreign owned companies, if those companies were deemed to be making a significant contribution to the development of the sector in Namibia (Ch 6, 4.1.2). The debate surrounding participation by foreign companies in the industry becomes important only in as much as the benefit of uncollected resource rent is accruing to foreign shareholders as abnormal profit or as a subsidy for the financing of over-capacity. It does not impinge on the debate about normal profits, or the transfer of technical or management skill or technology.

The point at issue here is that there exists resource rent, associated with holding a right of exploitation in the fisheries sector and that part of this rent is accruing to companies within the industry. It is a rent that rightly belongs to the people as a whole and an obligation rests with the state to recover that rent to be used for the general good. Whether the companies are owned by foreigners or by nationals, the issue remains as to whether the rent is being appropriately used.

It might well be that the provision of subsidies to companies within the fishing industry for particular purposes is identified as a good and productive use for that rent or part of that rent. On the other hand spending it, for example, on subsidising housing development or on expanding education or health services may be considered more important. Any use of this rent to subsidise companies within the industry should be done with specific objectives identified and with proper accountability of use of the rent, as should be the case with any other form of subsidy.

The conclusion that this chapter reaches is that formal ownership of shares should not be a basis for allocating rent. The assumption made by the Namibian Government, that allocating fishing rights to Namibian owned companies will mean that the rent associated with the right will accrue to Namibians, is not supported by the empirical evidence presented in this chapter. Secondly, even if it could be guaranteed that the rent would reach Namibians, allocation in this manner is too indiscriminate and tends to reach a more wealthy and literate part of the population, rather meeting the socio-economic objective of addressing the poverty of those deprived by the system of apartheid. The chapter will demonstrate that it is not possible to adequately track changes in ownership of companies and that, in any case, rent accumulation is associated more with power and control within the industry than with ownership of the companies allocated rights.

2. A note on the data used

The investigation carried out for this chapter is based largely on extraction of records of fishing companies operating in Namibia from the Register of Companies (MTI Register), held by the Ministry of Trade and Industry in Windhoek, Namibia. The information gained from this source was used to trace the registers of members of the fishing companies in order to obtain information on share ownership[34].

The methodology used and limitations of the data available are discussed in Chapter 1, 5.3.4.

3. Change in formal ownership of the industry

A considerable shift took place in the formal ownership of fishing companies operating in Namibia after the country became independent.

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[34] See Ch1,footnote3.

3.1 Ownership of the industry in the 1980s

In order to gauge the extent of change in the Namibian fisheries sector, it is useful to examine the ownership and control of the sector before policies were introduced that brought about a degree of change.

The off-shore fishery was dominated by foreign fleets, particularly those of Spain, targeting hake, and the USSR, targeting horse mackerel (see Ch 2). These fleets operated within what are now Namibian waters but what were, before independence, part of the high seas. They did not operate from a Namibian base.

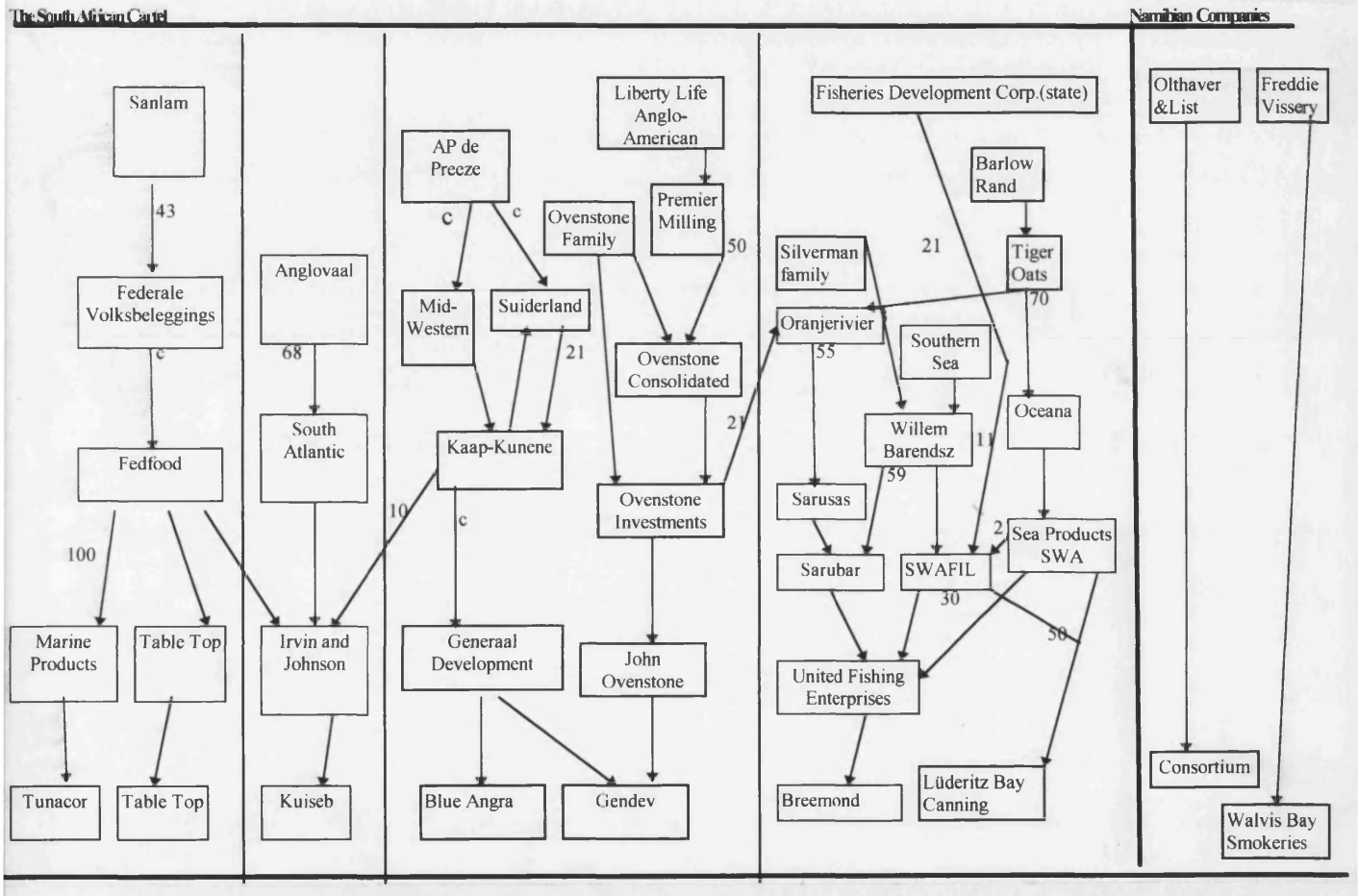

Figure 25: Ownership and control of the Namibian based fishing industry, 1983. Source: Adapted from Moorsom. 1984; p52. Numbers represent % shareholding; c = controlling shareholding. Peripheral to this were a number of small boat owners and enterprises not reflected in this diagram

In the early 1980s the fisheries sector based in Namibia was dominated by a tightly knit cartel of South African companies whose main interest was primarily the pelagic fishery (ibid.). Figure 25 offers a summary of the structure within the fishing industry at that time for all fisheries based in Namibia.

There were significant cross shareholdings which helped cement the cartel arrangements. These companies controlled 7 of the 9 operating processing factories (Moorsom 1984a), eleven of the 12 pelagic fish factory licences, together with 91% of the pelagic quota and over half of the purse-seiners (ibid.). They controlled all the rock lobster export licences and owned almost all of the rock lobster boats. Three of the five white fish processing plants opened in 1982 were owned by these companies, as were 45% of the bottom trawlers based in Namibia (Moorsom 1984a, p51).

There were two independent Namibian companies, Consortium and Freddie Visserye (Pty) Ltd. Consortium was, and still is, owned largely by the wealthy Namibian-German List family and is controlled by them. This company marketed its fish meal and fish oil through the cartel and sold its frozen fish through Irvin and Johnson, a South African company, which was part of the cartel (ibid.). Freddie Visserye was owned by a small operator who gradually built up the fishing company and marketed his production independently (ibid.).

Note that the big names in the South African fishing industry were part of the cartel. It will be shown below that most of them still retain a substantial interest in the Namibian fisheries sector, both directly and through management agreements which tie the production into the South African industry. Similarly it will be shown that growth in the participation of Spanish companies in the hake fishery in particular has been significant since the Spanish fleet was expelled in 1990/91.

While these were the companies which dominated the fishing industry in Namibia in the early and mid-1980s, there were a number of small boat owners, particularly in the line-fish and the purse-seiner fleets. Ownership and control of the fishing industry was overwhelmingly in the hands of the white minority of the population as it was in South Africa.

It is not practicable to trace the changing ownership structures and company names used within the fishing industry until the present day and, in any case, such a comprehensive and detailed review is not needed to underpin the argument of this thesis. It is important to note, however, that despite the

changes that have taken place in the Namibian fisheries, the big players who chose to remain engaged in the sector, still retain a substantial and controlling interest in it.

At the time of independence certain changes had taken place in the fisheries sector. Fedfood, a South African conglomerate, had become Foodcorp when Medbac, an industrial holding company, secured a controlling interest. As a result of rationalisation, Medbac decided to sell Tunacor to Namib Fisheries Holdings, which in turn was owned by two Portuguese and one Spanish national, all resident in Namibia, who applied for and obtained Namibian nationality. Minority interests were purchased by the Spanish fishing companies, Pescapuerta SA, which has a 25.7% share, and Frigorificos Puerta Prada SA, which holds 4.3% of the shares (register of members (RM), Namib Fisheries Holdings). This appeared to be a genuine withdrawal by a major South African company from the Namibian fisheries sector, apparently because of a lack of confidence at the time regarding the future of the company following Namibia's independence (de Castro 1995).

Irvin and Johnson retained their 100% interest in Kuiseb, Gendev strengthened its position in the Namibian fisheries, Sea Harvest Corporation and United Fishing Enterprises were still operating and, in the early 1990s, Oceana, another large South African fishing company, bought a small company called Erongo Sea Products.

3.2 The new look in 1993

Quota, particularly in the case of certain species, is associated with resource rents; thus the enthusiasm seen in 1993 for securing a right of exploitation, a prerequisite to receiving a quota. It is important to examine, therefore, who received rights of exploitation in 1993 as a result of the application of the criteria discussed in Chapter 6 and what quota and rent was associated with these allocations.

Following the granting of new rights of exploitation in 1993, it was claimed that,

> "from a position where the industry was almost completely foreign-owned, nearly 70% of the rights holders are effectively wholly-owned Namibian businesses and another 23% are majority Namibian owned" (Kankondi 1994).

Thus it was claimed that 93% of companies granted rights of exploitation were either wholly or majority owned by Namibians. While there was certainly additional benefit accruing to Namibian owned enterprises, the change that occurred in reality was not nearly as dramatic as it appeared to

have been from the above and similar statements made at the time. An implied notion from this statement is the belief that, by granting rights to Namibian owned companies, the benefit of the resource will accrue to Namibians. It will be demonstrated in this chapter that this is by no means necessarily the case.

Following the invitation by the MFMR for interested parties to apply for rights of exploitation in 1993, to take effect on 1 January 1994, the Ministry received 565 applications for these rights from 316 applicants (Ch 6, 4.3.3).

Of the 120 companies and individuals granted rights of exploitation, there were 38 new entrants into the fisheries in 1993 (MFMR 1993c). Six of these were owners of small ski boats which may go to sea for a few hours at a time and five were to the owners of small rock lobster boats which receive a 10 tonne rock lobster quota each year. The remaining 27 rights were granted to "newcomer" companies which were judged, in accordance with the criteria, to fulfil the requirement that they grant an opportunity to competent companies drawn, in effect, predominantly from the black community, to participate in the industry.

A further set of 47 companies, which had entered the fishing industry between 1990 and 1993, had their rights renewed. These companies originally had been granted rights of exploitation before the criteria were formulated and applied in 1993. The Ministry was attempting to grant opportunities to new Namibian entrants into the fishing industry which had the potential to compete with the established white and foreign controlled businesses and grow independently and not just be absorbed by the existing businesses in various ways, such as through joint ventures (Clark 1994). At the same time there was the need to accommodate established, functioning fishing enterprises so as not to destroy the productive capacity that already existed (ibid.). Thus some of the companies that had rights renewed in 1993 may not necessarily have received the rights had they been applying then as new entrants into the fishing industry. They were deemed by the Ministry to have functioned sufficiently well to justify a renewal of their rights.

In all, 85 companies or individuals that were not among those granted rights in 1987, had gained rights of exploitation since independence in 1990. One company is the National Fishing Corporation Ltd, a government owned company discussed in Chapter 6, section 5. The company, also known as Fishcor, is intended for wider ownership when its shares are offered on the Namibian Stock Exchange.

Of these 85 companies, it was not possible to trace the ownership and control of six rights-holders because either their records did not appear in the Register of Companies, or the records that were held in the Register were so out of date that the company secretary could no longer be traced. One company, Aquamarine Fishing Company (Pty) Ltd, which operates by annually selling its crab quota to Taiyo Namibia (Pty) Ltd, was de-registered as a company in terms of the Companies Act (Namibia 1996).

Sixteen of the 85 companies (18.8%) that had entered the industry since independence had a substantial change in their shareholdings. In most cases the companies had either become wholly owned subsidiaries of larger companies or larger companies had bought a substantial majority of the shares. Two of the companies had become wholly owned by one of the shareholders.

It is hardly necessary explicitly to state that the poorest of Namibia's population were excluded by this process, as it is generally true that a degree of literacy and understanding of the system is necessary to make a successful application. Consequently, a more wealthy and literate portion of the population would tend to apply for such rights. The only benefit which may be gained by the poorest part of Namibia's population is indirectly through the quota levies paid into the general revenue fund of government, and possibly through the provision of employment to a small percentage of the poor. This is not to argue that the poor and destitute should have been granted the rights to exploit Namibia fisheries resources. On the contrary, the rights needed to be granted to those with the competence, or at least the potential capacity, to harvest the resource efficiently. However, much more precise methods are needed to ensure that benefit from the resource is effectively directed to those who had really suffered deprivation from the system of apartheid. If the allocation of quota results in the better off in society gaining a disproportionate share of the benefit of this resource rather than those most affected by past discriminatory practices, then the allocation does not particularly benefit those who should be benefiting from the resource from a policy perspective. If this is the case, then the Government is not fulfilling adequately the second of its policy objectives.

4. Three case studies of Namibianisation

In the cases of smaller companies, the beneficial shareholdings of the fishing companies are not generally in dispute. However, there are questions which may be raised about the nature of the Namibianisation of the larger established companies. Case studies of three of the large Namibian

fishing companies reveal how Namibian ownership of a majority of shares does not reflect control over the enterprise and, therefore, the profits. The third example appears to be a blatant attempt to hide the identity of the real beneficiaries.

4.1 Kuiseb Fish Products

At the time of Namibia's independence, Kuiseb Fish Products was a wholly owned subsidiary of Irvin and Johnson (I&J), a large, established South African fishing company. I&J is in turn wholly owned by Anglovaal Ltd, a subsidiary of Anglovaal Holdings. The principal shareholders of Anglovaal Holdings are the Hersov and Menell families who together hold 51% of the shares (JSE 1996, p77-78). These relationships are depicted in Figure 26 below.

Following publication of the White Paper (Namibia, 1991a) presenting the new Government's fisheries policy in 1991, and the emphasis in that document on the greater benefits that would accrue to Namibian companies in the fisheries sector, I&J decided formally to rearrange its shareholdings of Kuiseb Fish Products as the most favourable means of retaining access to Namibia's fish stocks. Namibian vessels, defined as those with 51% or more Namibian ownership and with Namibians forming a high proportion[35] of the crew (ibid., p33), would be favoured over foreign vessels (ibid. p34). There would be generous rebates on quota levies for those companies with greater than 51% Namibian ownership and for the use of Namibian owned and registered vessels (ibid., p36-37).

[35] Later determined as 80% of the crew (Namibia 1994b).

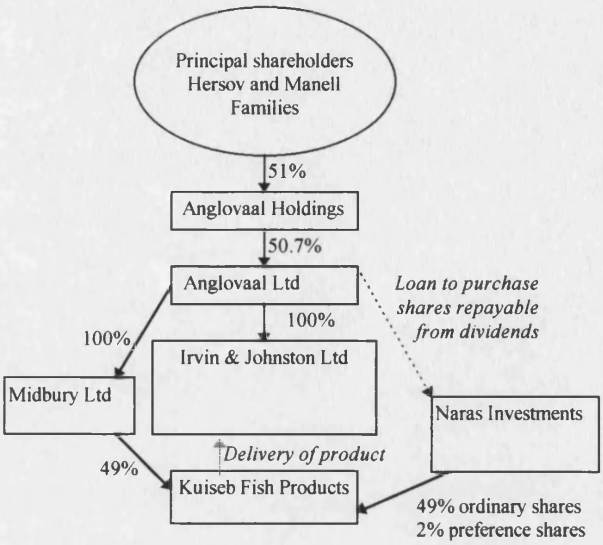

Figure 26: Structure of ownership of Kuiseb Fish Products. Source of data: Johannesburg Stock Exchange Handbook, 1996/1997; Register of Companies and company registers of members.

Anglovaal, I&J's parent company, provided finance to enable a newly registered Namibian company, Naras Investments, to purchase 51% of the shares of Kuiseb Fish Products. Naras Investments' shares in Kuiseb would be made up of 49% ordinary shares and a further 2% of non-voting preference shares. The Companies Act prohibits a company from financing the purchase of its own shares but the letter of the law is not violated if the parent company finances the share purchase.

Apart from Naras Investments not having a majority of voting shares, I&J have retained full control of Kuiseb through the existence of a management agreement through which I&J retain management control of the company and through a marketing agreement which obliges Kuiseb to sell all their production through I&J (Arnold 1995). In this way I&J could guarantee favourable consideration of its application for a renewal of its right of exploitation when the existing concessions terminated at the end of 1993, having "Namibianised" through a partnership arrangement with a company whose shareholders were people "who have been socially, economically or educationally disadvantaged" by the system of apartheid (Namibia 1993a, regulation 2(a)). Any dividend costs involved in accommodating the 51% share ownership by Naras Investments could be provided for through charges for management and marketing services and though prices set by I&J for the products sold to it by Kuiseb Fish Products.

Although Namibians have a 51% share in this company, the chances of them benefiting from 51% of the resource rent not collected by Government and not otherwise dissipated on overcapacity, seems remote, as they are dependant on costing and pricing decisions made by I&J.

4.2 Etosha Fishing

Prior to independence Etosha Fisheries Holdings (Pty) Ltd, the holding company of Etosha Fishing Corporation (Pty) Ltd, was a wholly owned subsidiary of Premier Fishing of South Africa. A similar exercise to that of I&J was undertaken by Premier Fishing in order to protect its access to Namibia's fish stocks and to accumulate quota.

It made a deal with four new Namibian companies through which they each purchased 45300 shares (11.25%) in Etosha Fisheries Holding Company which gave the four companies together a 45% share in Etosha Fisheries Holding Company. The Premier Group retained a 45% share in the company. Premier financed the deal, presumably through an affiliate to comply with legal requirements, with debt redemption to be made from dividends. The remaining 10% of shares were sold to 156 Namibian individuals, mostly in lots of 100 shares each. These new arrangements are reflected in Figure 27 below.

This deal also involves a management agreement with Premier Fishing in South Africa, through which the latter retains control of the company, apparently until debts are repaid (Barnes 1995). A further debt has been created through the building of a new canning plant for Etosha Fishing in Walvis Bay at the cost of N$35 million (ibid.). Detailed arrangements relating to the construction of the new plant were being made by the Premier Group in Cape Town (ibid.).

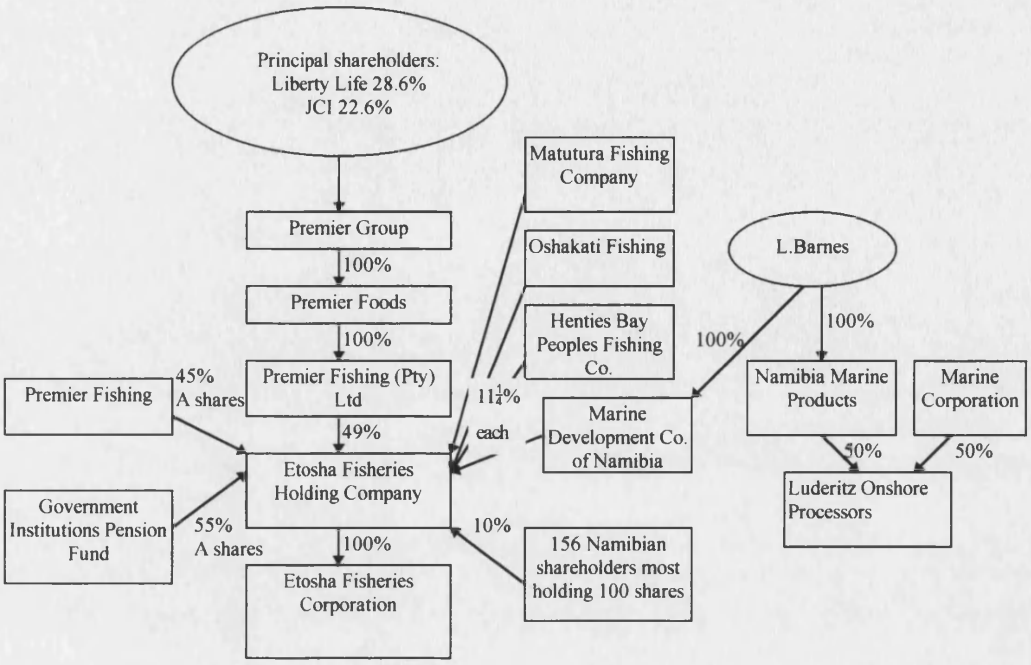

Figure 27: Ownership structure of Etosha Fisheries Corporation - Source of data: Company registers of members, Register of Companies. Johannesburg Stock Exchange Handbook, 1996/1997.

The claim that this represents a take-over by newly formed Namibian Companies of the interests of a large South African fishing company (ibid.) does not stand up as the Premier Group is in a position to control the creation of debt and the rate of repayments.

Etosha Fisheries Corporation, the operational company, has only two directors, one drawn from the Premier Group in Cape Town and the other a businessman form northern Namibia (Register of Companies). The holding company, the Etosha Fisheries Holding Company, responsible for the group's investments but not the operational arrangements, has 16 directors representing different interests in the group of companies.

This and the previous example demonstrate that ownership of a majority of the shares does not guarantee control over the company and consequently over benefits that accrue from quota allocated to that company. Corporate arrangements are easily made that ensure continued control by the large, powerful and well financed companies within the industry. This is particularly the case where there exists inadequate financing facilities for emerging companies that would enable them to act independently of the established companies within the industry.

The Ministry of Fisheries and Marine Resources hoped that the 'newcomer' companies, as they are commonly referred to in Namibia, would be able to establish themselves providing they were offered the opportunity of a quota allocation. The complaint was made almost universally in the interviews with representatives of newcomer companies undertaken during fieldwork for this thesis, that they were unable to raise finance which would enable them to make use of the quotas independently. The financial institutions did not regard a quota allocation as adequate collateral, particularly because quotas are not freely transferable. In the case of a default, the MFMR could refuse permission for the quota to be transferred to the financial institution that made the loan. Most of the newcomer companies entering the fishing industry since independence had very little or no capacity to raise finance. This difficulty emerges in other instances below, where the newcomers to the industry were forced to enter arrangements with larger companies that were disadvantageous to them.

4.3 The case of Namibian Sea Products Ltd and Namibian Fishing Industries Ltd

Both these companies had their origins in the South African fishing industry.

Sea Products (SWA) Ltd was established in 1952. It was later renamed Namibian Sea Products Ltd (also know as Namsea) when it became politically expedient to do so. It is quoted on the Johannesburg Stock Exchange and also on the Namibian Stock Exchange, since the establishment of that Exchange in 1993. At the time the Oceana Group, in which Tiger Oats has a 66% share, held a 53.4% controlling interest in the then Sea Products (SWA) (Jürgens 1992).

South West Africa Fishing Industries Ltd (SWAFIL) was established in 1947, and later became known as the Namibian Fishing Industries Ltd (Namfish). It too is quoted on the Johannesburg Stock Exchange and also became dual listed when the Namibian Stock Exchange was established. Namibia Sea Products is the principal shareholder (25.28%) of the Namibian Fishing Industries Ltd.

When applications for rights of exploitation were submitted in 1993 to the MFMR, the Ministry required from applicants details regarding the beneficial share ownership of the company in order to determine the extent to which they were Namibian owned. The application form for a right of exploitation (Namibia 1993a, Annexure A), requires proof of beneficial Namibian ownership, if Namibian ownership is claimed.

Namibia Sea Products Ltd and Namibian Fishing Industries Ltd made a case to the MFMR that it was not possible for them to determine the nationality of the 2670 shareholders of Namibian Sea Products and the 2184 shareholders of Namibian Fishing Industries Ltd (Namibian Stock Exchange, 25/9/96). They argued that the residency of the shareholders, rather than their nationality, should be taken into consideration in their case. The Ministry decided to accept this proposal (Clark 1994).

In 1985, 42 of the Namibia Sea Products' 663 shareholders (6%) were residents of Namibia (ibid.). In 1996 the register of shares held at the Namibian Stock Exchange (26/9/96) revealed that 2193 of the 2670 shareholders (82%), holding 80% of the shares, were residents of Namibia. Similarly in 1985, Namibian Fishing Industries Ltd claimed that 95 of its 1200 shareholders (8%) were resident in Namibia but, by 1996, 1834 of the 2184 shareholders (84%), holding 84% of the shares, were resident in Namibia. The complex ownership structure is shown in Figure 28.

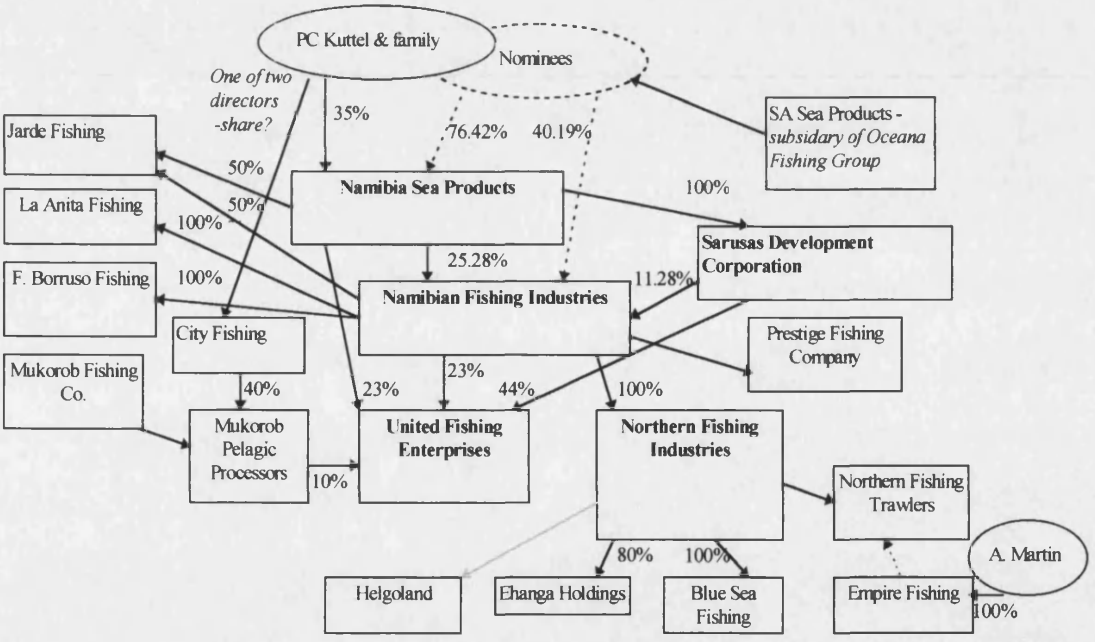

Figure 28: The ownership structure of the Namsea/Namfish group. Source of data: JSE Handbook (1996-1997); Companies registers of members; Register of Companies. The relationship of Helgoland to the group was unclear but it seemed most likely that it was to be a subsidiary of Northern Fishing Industries.

The explanation for this apparently dramatic change lies in the extensive use of nominee shareholders which has the effect of hiding the true identity of the beneficial shareholders and, in so doing, nullifying the efficacy of the provision of the Companies Acts which makes it an offence for a company to withhold information about its shareholdings (South Africa 1973, s113(1)). According to the register of shares at the Namibian Stock Exchange, nominee shareholders listed among the 30 largest shareholders, account for 76.42% of Namibia Sea Products shares.

The two largest shareholders, Standard Bank of Namibia Nominees (Pty) Ltd and Commercial Bank of Namibia Nominees (Pty) Ltd, are both resident in Namibia, in as much as these two companies have Namibian addresses. This tells us absolutely nothing about the nationality or the residency of the beneficial shareholders on whose behalf the shares are held. Between them they hold 65% of the shares of Namibia Sea Products Ltd. Yet the shareholdings of Namibia Sea Products reflected in the handbook of the Johannesburg Stock Exchange, where the company is also quoted, lists the Kuttel Family as the principal shareholder with 35% of the shares. Mr P.C. Kuttel does indeed take his position as chairman of the board of directors of Namibian Sea Products (MTI Register), flanked on the board by two other members of his family. The Kuttel Family, however, do not feature among the 30 largest shareholders of the company on the Namibian Stock Exchange and the thirtieth largest shareholder has just 0.156% of the shares compared to the Kuttels' 35% interest. The only possible explanation for this is that the Kuttel family shares are held by nominee shareholders on their behalf.

Peter Clerk Kuttel and family are wealthy United States citizens of long standing residence in Cape Town, South Africa although Kuttel now also cites a Walvis Bay address as his residence for use on official forms (ibid.). It is not always feasible to contest residency of shareholders. Although it would seem unlikely that Kuttel has seriously taken up residence in a block of flats in Walvis Bay, and lives there rather than in a leafy suburb of Cape Town, it would require substantial monitoring of his movements and a tighter definition of "resident" in order to be able to make the claim either way. The disbursement of rent based on residence would seem wholly inappropriate.

Namibia Sea Products Ltd holds 25.28% of the shares of Namibian Fishing Industries Ltd directly and holds a further 11.28% of the shares through its wholly owned subsidiary, Sarusas Development Corporation; it thus holds, 36.56% of the shares in all. Of the 23 largest shareholders, with 70 000 or more shares, a further 40.19% are held by nominees. Thus 75.75% of the shares of Namibian Fishing Industries are held by Namibia Sea Products and the nominee

shareholders. Again Mr.Kuttel is chairman of the Board of Directors and two other members of the board are from the Kuttel family.

In the case of both of these companies, there are probably other large beneficial shareholders whose identity is being hidden through the use of nominee shareholders. The original parent company, Sea Products of South Africa, for example, may well still have a significant share in the group through nominees but it is not possible to establish that this is the case.

The management of Namsea and Namfish clearly secured the agreement of the MFMR to classify the companies as Namibian on the basis of the residence of formal shareholders in order to evade questions regarding beneficial ownership of shares and to gain the rebates applicable to Namibian ownership which they would not have gained had the beneficial ownership been acknowledged.

This illustrates how designating a company as "Namibian" on the basis of the residency of the shareholders does not in any way mean that the beneficial shareholders are Namibians or residents of Namibia. This discussion has obvious implications for the proposed distribution of shares of the National Fishing Corporation (Ch. 6, 5). This matters if part of the resource rent is being made available to a company on the basis of nationality or residency as the benefit of the subsidy element involved is made available to unintended recipients.

5. Power and Control in the industry in 1996

At first sight it might be expected that ownership of shares in a company will reflect the distribution of power within that company and consequently control over resource rents which may accrue to the company as a result of its commercial activities. It becomes clear that, although ownership of shares can be significant, they are but one element in the exercise of power and control over resource rent within the industry. What appears to be more significant is the distribution of power within the industry which may be used to extract available resource rent as a result of ownership, or may be used to extract that resource rent through other means such as the charges that are made for services. This power may arise out of financial capacity, established marketing outlets, technical capacity, management ability and possession of operational capital assets.

5.1 Ownership in 1996

Sufficient data were collected to establish the general character of ownership within the industry and to identify certain trends which provides a basis for arguing that it is inappropriate to rely on ownership within the industry to address the poor distribution of wealth in the country as a whole and the imbalances that exist within the fishing industry. It is practically impossible, however, to present a complete picture of who the beneficial shareholders are of companies holding rights of exploitation within the Namibian fisheries sector. This arises in part out of the secret nature of the identity of beneficial shareholders who hold shares, for whatever reason, through nominee shareholders. In part the problem lies in the fact that many beneficial shareholders are not Namibian companies or individuals and the scale of the task required to investigate companies from New Zealand to Japan and from Spain to Chile would be greater than is necessary or feasible in order to establish the argument of this thesis.

The structure of the Namibian fishing industry has become considerably more complex in part because of efforts by companies to present a Namibianised image so as to meet the requirements of qualifying for the incentives offered to promote the process. A power structure within the industry in which smaller companies are clustered around the larger enterprises now exists. A graphic presentation of the Namibian industry as it now is in similar form to Figure 25 would be so complex that it would risk creating more confusion than clarity.

There is a reluctance, on the part of fishing companies, to admit to many of these ventures, because of the non-transferability of quotas. Although a joint venture arrangement may be presented to appear as if it is an arrangement between equals, this tends not to be the case. They often amount to the newcomer company remaining a 'paper' company, in the terminology used in the industry, doing no more than delivering the quota to the joint venture or, more accurately, to the larger company. These arrangements amount to transfer of the quota although they are not presented as such. This has given rise to justifiable accusations that newcomers have been reduced to "quota boys", as a Namibian newspaper headline put it (Ashekele 1995).

In the course of this investigation, 5454 shareholders were traced. Some 4800 (Register of Members 29/09/96) of these held relatively small numbers of shares in Namibia Sea Products and Namibia Fishing Industries Ltd, both quoted on the Namibian Stock Exchange. A small number of shareholders of these two companies held the bulk of the shares and were nominee shareholders

acting on behalf of the real beneficiaries, the identity of whom is not fully known. This problem was discussed further in section 4.3 above.

In addition, many shares are held by companies whose shares may in turn be held by companies. Of the 593 other shareholders specifically recorded as holding an interest in the Namibian fisheries sector, 139 (23.4%) were not natural persons; they were predominantly companies, but were also companies established as nominee shareholders, or trusts.

Namsov Holdings (Pty) Ltd holds 50.1% of Namsov Fishing Enterprises (Pty) Ltd, for example. Fifty percent of Namsov Holdings are held by a South African Company, the Manica Group, and 36.5% by OOO Sovrybflot, a Russian Company. The Manica Group is wholly owned by Rennies Group, a subsidiary of Safmarine & Rennies Holdings Ltd., the principal shareholders of which include CMB Nominees, Standard Bank Nominees Tvl (Pty) Ltd, Eighty One Main Street Nominees Ltd, First National Nominees, in addition to SA Mutual Life Assurance Society (JSE 1996, p281) which, incidentally , has a 22.6% share in the Premier Group which ultimately controls Etosha Fisheries.

The picture that emerges is that, even if it were possible to ensure that those that hold the shares in companies in the industry are those that receive the benefit of the resource, tracing the real beneficiaries of shares is complex and, therefore, costly and is continuously changing as shares are bought and sold. The evidence is sufficient to offer a picture of a trend in the consolidation of ownership and control in the industry around large established companies and demonstrates how resource rent that is not being dissipated by overcapacity accrues to a significant extent to non-Namibians and, where it accrues to Namibians, it does not accrue primarily to those who were disadvantaged by the apartheid system.

5.2 Consolidation of shares

As value is associated with access to quota, it is expected that companies will seek to acquire the benefits of as much additional quota as they are able to obtain. An obvious objective would be to gain control of small, financially weak, vulnerable companies that hold the distinct advantage of a right of exploitation and its associated quota but no other assets. However, in many instances this has not been the chosen route.

If one examines the options open to companies wishing to acquire additional quota, then purchasing a controlling interest in a company which holds a right of exploitation and is in receipt of quota has the attraction, in the short to medium term, of securing additional quota over the lifetime of the right of exploitation. If the discounted stream of expected benefits accruing from the purchase of the controlling interest in a quota holding company is greater than the purchase price of the shares, then it is clearly worth the quota collector making the purchase. If the assumption is made, however, that the company will have the right of exploitation renewed at the end of the period for which the right was granted, and the purchase price of the shares accommodates this assumption, then it may not be a good option making the purchase.

This will depend on the whether the MFMR takes the position that the right was granted to the company on the basis that it fulfilled certain criteria. If the criteria remain the same and the company no longer fulfils the criteria, then the right of exploitation may not be renewed and access to the quota through that company could be lost. The Ministry had taken the position, after all, that certain wholly owned subsidiary companies should not be given rights of exploitation in addition to the parent company when rights were granted in 1993. This was the case, for example, with Skeleton Coast Trawling (Pty) Ltd and Blue Angra Namibia (Pty) Ltd, wholly owned subsidiaries of Pescanova Fishing Industries and Lalandii (Pty) Ltd respectively (Clark 1996).

The Ministry faces a dilemma regarding the renewal of a right of exploitation to a company which originally had been granted that right as a 'newcomer' but which subsequently had been bought out by a larger enterprise and, therefore, no longer fulfils the criteria under which they were granted the right. Rights granted to newcomer companies were allocated in order to meet an objective of government policy that a Namibian owned and controlled industry be established with substantial participation by Namibia's black population which had been largely excluded from the ownership and control of the industry before independence. If companies did not continue to fulfil the criteria conditional upon which they had been granted those rights, the rights may not be renewed and other companies which did fulfil the criteria may be invited to apply for the rights (Clark 1996).

However, a ten year right of exploitation was granted in 1993 to Pescanova Fishing Industries, a wholly owned subsidiary of Pescanova SA of Spain, on the grounds that it had made a substantial investment in Namibia in the fishing industry and was employing more than five hundred Namibians. Under the criteria for the granting of rights of exploitation such an eventuality is accommodated (MFMR 1993a, para. 15(a)(ii)).

The Ministry expects a degree of consolidation within the industry to occur (Clark 1996). Some companies, successfully operating within the fisheries sector, have begun to gain control of quota through the purchase of smaller companies within the industry. For example, Northern Fishing Industries, a subsidiary of Namibian Fishing Industries, has bought out 80% of the shares of Ehanga Holdings and 100% of the shares of Blue Sea Fishing. It would claim that not only does the Namibian Government recognise it as a Namibian company for purposes of rebates on quota but it has also made substantial investments in Namibia and that the group employs more than 500 Namibians. If the Ministry were able to grant to Pescanova, a wholly owned Spanish company, the largest hake quota of all companies in the sector, and twice the size of the next largest quota, why should it not grant to a Namibian company a similar size quota when it too builds up capacity and employs a large number of Namibians? It would be clearly damaging to the Namibian Fishing Industries if it were to lose access to that quota, the only asset it gained by purchasing the companies.

5.2.1 Consolidation in the demersal hake fishery

Among Namibia's major fisheries, the hake sub-sector has associated with it the largest uncollected resource rent per tonne and consequently quota for this fish stock has been the most keenly sought after. Of the 565 applications made for rights of exploitation in 1993, 234 were for rights to fish for hake (1993). This was far higher than for the other two major fisheries: ninety five applications were made for rights to fish for horse mackerel and eighty five applications were made for pilchard (ibid.).

Many of the newcomer applicants had applied for rights only in the hake fishery and, because of the limitation on the number of companies that could be realistically accommodated, applicants who might have gained a right had they applied in another fishery, failed altogether to obtain a right of exploitation.

Thirty three existing rights holders applied for rights of exploitation in the hake fishery in 1993. Two of the applicants were refused rights outright and another two were refused because their parent companies were also applicants and were being granted a right (Clark 1996). Thus 29 existing rights holders were granted a renewal of their rights. Of these, 16 were companies that had been granted rights since independence. The decision had been made to grant hake rights to 38 applicants in all which meant that nine new applicants could be accommodated, two of which would

not immediately receive a quota allocation but would be granted a quota once the hake stock had sufficiently recovered to make this possible (ibid.). These two will not be considered further in this analysis as their rights have not yet been bought into effect and they have not yet received any quota.

Some atypical newcomers

In all, 23 of the 38 successful applicants were new to the industry since independence. Two of these companies should be set aside in this analysis because they are not genuinely new enterprises formed by individuals or groups previously excluded from the industry. The National Fishing Corporation is Government owned and financed and is thus atypical of a "newcomer" company to the industry and is, strictly speaking, the successor to "a company to be formed" listed among Namibian companies operating in the fisheries sector before independence. It needs to be considered separately. Northern Fishing Industries (Pty) Ltd was established in 1987 and is a subsidiary of the Namibian Fishing Industries Ltd which, in turn, is controlled by Namibian Sea Products Ltd. As such, it is part of a well established company in Namibia and had been involved in the hake fishery before independence (O'Linn and Twohig 1992, Appendix II).

Two other companies need to be considered separately as they are not typical of newcomers to the industry. The first is Overberg Fishing Company (Pty) Ltd., owned by a group of successful white business people living in Walvis Bay and nearby Swakopmund.

This company successfully overcame what, from their own account, was a disastrously disadvantagous joint venture arrangement (see 5.3.3 below) but did so because they were able to raise the finance necessary to retrieve their position. Other newcomers to the industry have had no access to finance and have consequently fallen victim to the acquisitiveness of larger enterprises. As can be seen from the Figure 29, this company is developing into a much larger enterprises with interests in several other companies.

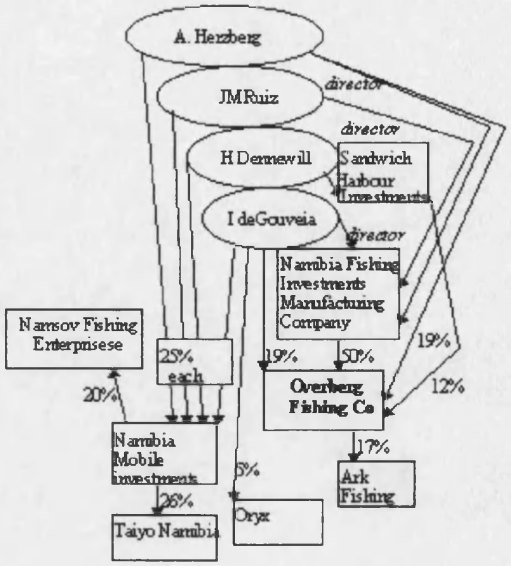

Figure 29: Ownership structure of Overberg Fishing Company. Source of data: Company transfer registers; Register of Companies.

The second of these is Lüderitz Onshore Processing, which is owned by Namibia Marine Products and the Marine Corporation, each with a 50% interest. Namibian Marine Products is owned by Mr L J Barnes, who served in South Africa's client government in Namibia and, although of mixed race, sought advantage out of his participation in South Africa's government structures in Namibia for many years prior to independence. Marine Development Co. of Namibia is also wholly owned by Barnes (see Figure 27). Mr A.J. Louw, who owns two-thirds of the shares in the Marine Corporation of Namibia, had been a National Party member of the South West Africa Legislative Assembly in the 1970s. These people could not qualify as been among those disadvantaged by the system of apartheid.

Three other companies require separate mention. Eros Fishing has 61% of its shares held by Zebra Holdings which also holds 51% of the shares in Mangetti Fishing. Zebra Holdings is said to have been established by SWAPO, the governing party and the two shareholders, Mr Frans Indongo, who holds 85% of the shares, and Mr. N Mulkwilongo, who holds 15% of the shares, are nominees shareholders acting on behalf of SWAPO (Coetzee 1994). Both are known SWAPO supporters and are wealthy business people from northern Namibia who could also be expected to hold the shares in their own right. The shares held by them could also be a combination of those that they hold in their own right and those that they hold on behalf of SWAPO. Note in Figure 32 below how these

two companies and Veritable Fishing co-operate with Oya Namibia, a company wholly owned by Barconoya SA of Spain.

Veritable Fishing is registered, and is wholly owned by, the PLAN Veterans Trust which was established to assist veterans of the People's Liberation Army of Namibia (PLAN), the military wing of SWAPO prior to independence. Many former combatants of PLAN live in poverty, mainly in the northern part of Namibia. Numerous attempts at job creation and the expenditure of N$125 million, has not been very successful, a problem acknowledged by President Nujoma (Moyo 1997b).

The remaining 16 newcomers:

It is instructive to examine what has become of the remainder of those companies which joined the industry since Namibia's independence in 1990 and were granted rights of exploitation for hake, as they represent more closely the type of company that was apparently being promoted in fulfilment of the policy objective of granting greater access to Namibians in the fisheries sector. Six of the remaining 16 companies (37.5%) have changed hands.

One company, Empire Fishing, has become wholly owned by A. Martin, the managing director, who originally held 20% of the shares.

The share ownership of Diaz Fishing in 1993 was as follows: 49% was held by Allcom Industries, which has a Cuban director and was described by the managing director of Diaz as a foreign company (Martin, S, 1995), 26% was owned by 6 Namibian individuals and 25% was held by Seafood Distributors (Pty) Ltd., whose shares were owned by 11 Namibian individuals. Seafood Distributors is now a wholly owned subsidiary of the Sea Harvest Corporation of Namibia and the 25% share of Diaz Fishing, previously held by Seafood Distributors, is held now by CBN Nominees. These two developments took place within days of each other. It is not possible to establish whether CBN Nominees' 25% share in Diaz Fishing is in the hands of Sea Harvest, but circumstances suggest that this could now be the case. On the other hand, if these shares are held by Allcom Industries, it would provide that company with a 74% interest in Diaz Fishing.

The remaining four companies in this group are now unambiguously controlled by one or other of the major companies. The register of members of Helgoland Fishing (Pty) Ltd was unavailable because it was being transferred to new secretaries as a result of a take-over of the company by

P.C. Kuttel (Schwieger 1996), the principal shareholder in Namibia Sea Products, although it was not clear what the distribution of shares would be. The directorships recorded in the Register of Companies confirms this take-over (MTI Register, 90/555).

Eighty percent of the shares of Ehanga Fishing have been transferred to Northern Fishing Industries, the wholly owned subsidiary of Namibian Fishing Industries (Figure 28), in turn controlled by Namibia Sea Products. This company was formerly owned by two small wholly owned Namibian companies.

Namib Fisheries Holdings now has a majority 72.7% share of Saddle Hill Namibian Fishing Company (Pty) Ltd. In 1993 Namib Fisheries Holdings had a 45% share in this company. Two thirds of the shares in Namib Fisheries Holdings are held by two Namibians who formally held Spanish and Portuguese passports. Thirty percent of the shares are held by two Spanish companies (see 2.2 above).

Agatha Bay Fishing was in the process of changing ownership and the register of members was not available.

Ownership of the remaining "newcomer" companies in the hake fishery remains substantially the same as in 1993.

5.2.2 The pelagic fishery

Prior to 1993 there were 24 pelagic rights holders operating in Namibian waters. Of these, 23 applied to have their rights renewed and were again granted rights of exploitation at the end of 1993. Dominating the list were the larger companies which have factories, namely, Consortium Fisheries, Gendev, Namib Fisheries, Etosha Fisheries and the three established companies in United Fishing Enterprises (Figure 28).

Etosha Fisheries had absorbed four newcomers following independence, namely Henties Bay People Fishing Company (Pty) Ltd, Marine Development Company(Pty) Ltd , Matutura Fishing Company (Pty) Ltd and Oshakati Fishing Company (Pty) Ltd in an arrangement described in section 4.2. Mukorob Fishing, another newcomer, joined Namibia Sea Products, Namibian Fishing

Industries and Sarusas Development, the group which share United Fishing Enterprises and are controlled by Namibia Sea Products, which runs the group's fishmeal, fish-oil and canning plants.

Apart from these, there were 11 private boat owners who had rights in the pelagic sub-sector prior to 1993. It was noted in (Ch. 7, 5) that the entire sub-sector operates as a cartel. The amount paid to the boat owners per tonne is set by the factories which agree among themselves on the amount in order to avoid competition with each other for the catch of private boat owners. The same recipes are used for preparing the tinned fish and the marketing is done through Atlantic Canned Fish Sales, which in turn operates through Federal Marine in South Africa, with all production sold under the same set of labels. When the TAC was dramatically reduced in 1995 and 1996, the factories pooled their quota and kept only one canning factory operational.

Eight new rights were granted to "newcomers" in 1993, two of whom would not immediately have quota allocated and one of whom was a Lüderitz based company which was granted a right for the purpose of using a small quota for bait in the tuna fishery.

Two private boat owners, F. Borruso Fishing and Jadre Fishing, sold out to the Namibia Sea Products/Namibian Fishing Industries group following the collapse of stocks and consequently lower quota during 1995 and 1996. Otherwise there was no change in the formal ownership of the quota holding companies within the industry.

5.2.3 Mid-water trawl fishery

The mid-water trawl fishery, targeting horse mackerel, has been based on the chartering of foreign vessels, for the most part from the former Soviet Union. The impact of these developments on the Namibian fisheries was reviewed in Chapter 5, section 1.4.

Eighteen of the existing 23 quota-holders had their rights renewed at the end of 1993. Two of them received rights for a 10 year period because, in the one case, the company concerned, Arechanab Fishing and Development (Pty) Ltd., had established a plant for drying and salting fish at Arandis, a small town in the Namib Desert some 90 kilometres from Walvis Bay; in the other, TNP Fishing (Pty) Ltd. had managed to open up new marketing opportunities for horse mackerel in Southern Africa. Namsov Fishing Enterprises received a seven year right of exploitation as it organised the

charter of several vessels and it was granted the largest quota. All other rights were granted for a period of four years.

In addition, rights of four years were granted to another seven "newcomer" companies at the end of 1993 which came into effect at the beginning of 1994.

In this fishery only one company has changed hands. Arechanab Fishing and Development (Pty) Ltd, which established the drying, salting and smoking plant for horse mackerel at Arandis, ran in to marketing problems for their products. This was particularly the case for smoked horse mackerel, the shelf life of which is not as extended as it is for dried fish. They had the experience of a large consignment going rotten, were unable to sustain the financial losses involved, and found themselves needing to sell a controlling interest in the company to Erongo Sea Products, which is controlled, in turn, by the Oceana Group of South Africa (Adams 1995; see Figure 33). Significantly, Arechanab also has a right of exploitation for hake, although this right still awaits the allocation of a hake quota.

5.2.4 Overview

The ownership and control of the fishing companies with an interest in the most valuable fishery, the hake fishery, has been the most keenly contested, despite the uncertainty that exists concerning a renewal of rights for companies the ownership of which has changed. By far the greatest unit value is associated with this fishery among Namibia's major fisheries. Less sought after have been the companies involved in the other two major fisheries. The pilchard fishery has been in a poor state and the variability of stock size at a low level has dampened interest in this fishery. The horse mackerel fishery, which has a smaller value associated with it, but which has a much higher and more dependable volume, has suffered from being a more marginal fishery because of market conditions and the impact of the involvement of the former Soviet fleet.

5.3 Control through Joint ventures

An alternative path for larger companies for securing the benefit of additional quota has been through joint venture arrangements.

Unavailability of financing, inadequacies in fisheries management ability and experience, and a lack of knowledge of and access to markets have led to many of the newcomer companies becoming involved in unsatisfactory joint venture arrangements.

The need to make such arrangements was reinforced unintentionally by the requirement of the Ministry of Fisheries and Marine Resources that a company pay its quota levy whether or not the quota has been caught. After deciding on a total allowable catch for the fishing season, the Ministry divides the TAC into quotas and informs each fishing company of the quota it is prepared to allocate the company for the season. The company may then accept the full quota or part of the quota or reject it altogether. Rejecting the quota could lead ultimately to a withdrawal of the right of exploitation as it would indicate an incapacity to participate in the industry. Accepting a smaller quota may lead the Ministry to regard that company as only having capacity to deal with a smaller quota, resulting in the MFMR offering a smaller quota to the company in future years. There is consequently very considerable pressure on a company to accept the full quota that it is offered. However, a condition of accepting the quota is that the company takes on liability for paying the quota levy for the entire quota whether or not it eventually catches that quota. The larger established companies have exploited the resulting desperation of the newcomers who do not have their own vessels to have their quota caught, tying them into arrangements that are decidedly to the advantage of the bigger companies.

There also exists considerable pressure to purchase vessels, an issue discussed in Ch 7. This imperative has contributed to the growth in unsatisfactory joint venture arrangements and to vessel purchasing agreements which tie the newcomer company, and more particularly their quota, to the larger established company providing the finance. There exists an understandable reluctance by newcomer companies to expose the manner and extent to which they are being exploited by better financed and more powerful companies within the industry. This is particularly the case when they feel that they have no alternative other than to continue with the joint venture. While it is relatively easy to learn of the detail of these arrangements from frustrated managing directors of small newcomer companies, few are willing to reveal detail on the record. It is possible, however, to illustrate such arrangements.

5.3.1 The case of Namibia Marine Resources (Pty) Ltd

Namibian Marine Resources (Pty) Ltd (NMR) was established by a successful local entrepreneur, Mr Mathew Shikongo, in 1991(MTI Register). NMR received a quota for 1991 of 1330 tonnes of hake (Anon. 1992). A joint venture company, Ferina (Pty) Ltd, was then established with a Danish company, Sudurhavid (Pty) Ltd, based in the Faroe islands (Shikongo 1995).

NMR held a 51% share in Ferina, the remaining 49% being held by the joint venture partner. The agreements involved NMR supplying the quota to the joint venture while the necessary expertise, skilled personnel, vessels, management skills and marketing would be supplied by Sudurhavid (ibid.). Such an arrangement is typical of those made between the newcomer companies and others in the Namibian fishing industry.

A vessel was sold to the joint venture company by Sudurhavid (Pty) Ltd at what NMR later discovered to be an inflated price (ibid.). The crew, supplied by Sudurhavid (Pty) Ltd, proceeded to fish the quota, landed and sold the catch in Cape Town and transferred the proceeds into a bank account held by Sudurhavid (Pty) Ltd in Walvis Bay (Anon. 1992). NMR saw no receipts for the sale of the fish and it appeared to Mr Shikongo that Ferina (Pty) Ltd was heading for insolvency from what should have been a profitable operation (ibid.). NMR complained that it was in the invidious position of not being able to determine Ferina's precise financial position (ibid.), despite holding 51% of the company's shares.

NMR successfully applied for liquidation of Ferina in the courts (Shikongo 1995) and in this way succeeded in escaping from a very disadvantageous arrangement.

5.3.2 A Similar case

A similar case involves a large established company in Namibia and a newcomer to the industry. Although it cannot be properly cited as an example due to confidentiality relating to the source of this information and to the identity of the two companies involved, it is nevertheless useful to consider what happened in this instance. A joint venture was entered into, the larger company supplying the vessel, crew and the processing facilities and undertaking to market the product. The newcomer would supply the quota to the joint venture company. Costs to the joint venture arising out of the provision of the services of a vessel and for management and marketing by the large company resulted in a loss for the joint venture of about N$400 000 for 1995, with the newcomer

company then being liable for about N$200 000. Had the newcomer simply sold the quota to the established company at the going rate of N$800-850 per tonne, it would have made a clear profit of about N$1 million for that year alone. Instead the newcomer company accumulated a debt!

5.3.3 The case of Overberg Fishing Company (Pty) Ltd.

Overberg was established in 1989, originally under the name Namibia Fish Traders. Shareholders of this company brought to it both experience in the industry and access to finance and consequently were not in the much more difficult position of most of the newcomer companies. Fifty percent of the shares were held by a company called Marfrio Namibia (Pty) Ltd, in which Marfrio SA, a Spanish company with large investments in the fishing industry and with an established distribution network, had a 90% share. A marketing agreement was entered into with the parent company of this substantial shareholder in Overberg. Overberg was not presented with invoices by Marfrio and they received no information from the Spanish company as to what prices they were getting for the different grades of fish product which the joint venture was producing (Herzberg 1995). In addition, Marfrio took about six months to transfer revenue for the sale of the product.

Five other newcomer companies were marketing their product through Marfrio, presumably under similar or less favourable conditions due to their relatively weaker positions (Herzberg 1995).

Overberg was able to resolve the issue by cancelling the marketing agreement with Marfrio and by buying out the Spanish interest in Marfrio Namibia. It was possible for them to do so because, as a group of relatively more wealthy business people, they were able to raise the finance to make this move. Most newcomers to the industry did not find themselves in that position.

All of these cases involved the sale of the catch to the parent company of their foreign partners which simply sets the price it is prepared to pay for the product.

5.4 Other types of agreements between larger and smaller companies

Other types of agreements exist between smaller fishing companies and the larger established companies operating in the Namibian fishing industry which could result in the larger company extracting resource rent associated with the quota of the smaller company. There are two other common agreements.

The first of these involves an agreement that processing and marketing be undertaken by the larger company on behalf of the smaller company. If a small company has a quota for frozen hake, then the sea frozen product is landed for transhipment abroad. However, when the product is landed wet (i.e. not frozen), the small company without a processing plant has to deliver the fish to a processing plant. This is the case even if the fish is to be exported fresh by air as it needs to be cleaned and packed in ice in suitable boxes ready for transportation.

The companies owning the processing plants offer a standard ex-jetty price for wet hake landed. In 1994 it was N$2.30-N$2.50 per kilogram (Shikongo 1995; Martins 1995). The price would be set in accordance with what proportion of the catch was considered of export quality by the processing plant, and suspicions were common among newcomers that they were being given low prices through deception. The processing company would claim that a high proportion of the catch was of low quality and would therefore only attract low prices. Of the three newcomer companies interviewed that were selling the catch to a processor, all of them volunteered this view, based on informal enquiries about their catches gleaned from workers in the processing plants.

At times, contracts of this sort are part of a larger deal involving the sale of a vessel by the larger company where the larger company finances the purchase. In desperation to purchase a vessel the smaller company will pay an inflated price for it; the larger company will then tie the company into a deal for several years of having the processing and marketing of the catch of the smaller company going through the larger company at prices set by the larger enterprise.

6. Trends in share ownership

Several trends become apparent when the pattern of share ownership is examined. The first is the re-establishment of domination of the industry by South African and Spanish companies in the hake fishery, the South African industry in the pilchard fishery and the continued presence of the former Soviet fleet, largely Russian, in the horse mackerel fishery. The second major feature is the presence of particular individuals as major shareholders in the industry benefiting in one way or the other from the uncollected resource rents in the industry. The third feature is the relative lack of success of the 'newcomer' companies in the industry.

Table 11 below identifies companies with the largest stakes in the Namibian fisheries sector.

If the seven largest recipients of hake quota are considered, two of them are Spanish companies (Cadilu and Pescanova) and a third has substantial minority Spanish interest (Namib Fisheries Holdings). Two are controlled by South African companies (Sea Harvest Corporation and Irvin & Johnson). The remaining two are Namibian, one of which is the Government owned National Fishing Corporation and the other is owned by the wealthy German-Namibian List family who have large diversified business interests in other sectors of the Namibian economy. The seven largest business interests, representing 9 out of the 38 holders of rights of exploitation, receive 60.66% of the total allocated quota for hake. This does not take into account the quota which they may purchase annually from small quota holders or that which they may accumulate through joint venture or chartering arrangements or through processing and marketing agreements.

Company	% of allocated hake quota	% of allocated pilchard quota	% of allocated horse mackerel quota
Arechanab Fishing [1]	right without		8.14
Cadilu[2]	6.92		6.00
Consortium[3]	6.97	6.75	
Dun-al[4]		6.29	
Etosha[5]		4.71	
Henties Bay Peoples Fishing		5.95	
Matatura Fishing		5.95	
Namibia Marine Development		5.95	
Oshakati Fishing		5.95	
		28.51	
Gendev[6]		7.52	
Kuiseb[7]	6.35		6.86
Namib Fisheries Holdings[8]: Karibib	5.35		
Namib Fisheries		7.02	
Saddle Hill	1.75		
	7.1		
Namibia Sea Products[9]		3.32	
Namibian Fishing Industries	4.76	3.32	
Sarusas Development Corporation		6.39	
Mukorob Fishing Company		5.95	
		18.98	
Namsov Fishing Enterprises[10]			17.29
National Fishing Corporation[11]	7.28		
Overberg[12]	5.13		20% Namsov
Pescanova[13]	18.99		
Sea Harvest[14] Lalandii (Pty) Ltd	4.56		
Blue Angra (Namibia) (Pty) Ltd	2.49		
	7.05		
TNP Fishing[15]	right without		15.43
Veritable Fishing[16]	2.2	2.4	
Zebra Holdings[17] Eros	2.5		
Mangetti	2.94		
	5.44		
Total % of allocated quota held by these	**78.19%**	**77.4%**	**53.72%**

Table 11: Companies that have the largest stakes in the Namibian fisheries sector. Data from the Register of Companies, Ministry of Trade and Industry, individual company register of members. Quota shares computed from quotas 1994-1996, available from MFMR.

1. Controlled by Oceana Fishing Group of South Africa, through wholly owned subsidiaries, Blue Continent Products (Pty) Ltd and Erongo Sea Products (Pty) Ltd. Oceana Group operations in Namibia concentrates more on the purchasing and marketing of fish.

2. The three Namibian shareholders who had a 51% share in Cadilu sold out to Eduardo Vieira SA of Spain, with 16.7% share being sold to the Commonwealth Development Corporation.
3. 97% of shares owned by wealthy List Family with large diversified business interests throughout Namibia.
4. Belongs to Edwards Family, for decades involved in the fishing industry in Namibia.
5. Control by the Premier Group of South Africa of Etosha Fisheries Corporation and the associated companies is explained in section 3.2.
6. Gendev of Namibia Ltd: Register of Members held in Cape Town. Director: 2 Namibian, 3 from Suiderland , a South African investment holding company, 1 from Jersey.
7. Irvin and Johnson's control of Kuiseb Fish Products is discussed in 3.1 above.
8. J.L. Bastos and M. de Castro, Namibian nationals, each hold one third of shares. Two Spanish companies hold 30% of shares. Bastos, de Castro and Correia, who together had 51% of Cadilu shares in1993, facilitated re-entry of Spanish Company, Eduardo Vieira SA, the minority shareholder by selling their shares to Eduardo Vieira SA and Commonwealth Development Corporation.
9. Namsea/Namfish group is discussed in section 3.3 above. Includes allocations to Helgoland, Northern Fishing Industries, Ehanga Holdings, Blue Sea Fishing.
10. 10% of shares held by Namsov Community Trust; 50% of shares held by South African and Russian interests who appear to control the enterprise. A further 20% are held by the group of business people who own the Overberg Fishing Company.
11. Owned by a group of Walvis Bay entrepreneurs. See diagram and section 4.3.3.
12. Pescanova SA, a Spanish multinational fishing company, who own and control Pescanova Fishing Industries of Namibia. See discussion 5.1.1.1.
13. Sea Harvest Corporation of Namibia, now owned 49% by Sea Harvest Corporation of South Africa and 37% by nominees, had its application for a right of exploitation rejected in 1993 because it had never invested in Namibia dispite having operated in Namibian waters for many years. Subsequently it purchase Lalandii (Pty) Ltd and Blue Angra (Pty) Ltd, two Namibian companies holding hake rights. Possibly also have an interest in Diaz Fishing (see discussion in 4.2.1).
14. A Namibian company.
15. Owned by PLAN Veterans Trust (see section 4.2.1 above).
16. Zebra Holdings is not a fishing company but its significance as an enterprise belonging to the governing party is discussed in 5.1.1.1.

The six enterprises receiving the largest share of the pilchard TAC have accumulated 14 of the 29 rights of exploitation (48%) for pilchard and receive 75.07% of the allocated pilchard quota. In addition they have the remainder of the quota delivered to them through charter or processing agreements, as there is no other way of disposing of the catch. The two largest, both South African controlled enterprises, enjoy the benefit of 47.49% of the allocated pilchard quota.

Similarly, the five largest recipients of horse mackerel quota, that is 19.23% of horse mackerel rights holders, receive 53.72% of the allocated quota.

6.1 Spanish participation

It is instructive to examine what has happened with the Spanish presence in Namibian waters. It should be recalled that the large Spanish fleet was the main group harvesting hake in Namibian waters before independence. Most of the Spanish fleet left Namibian water following independence.

Pescanova SA, the largest multinational Spanish fishing company, recognised at an early stage that it was to its advantage to establish a plant in Namibia. They consequently invested in a large processing plant in Lüderitz, Namibia's southern port. Pescanova has increased its share of the quota through joint venture arrangements which, as was noted in section 5.3.2 above, can be very damaging to the newcomer company. Two such arrangements are identified in Figure 30 although there are possibly similar agreements not identified in this study. Pescanova is reported to have "several joint fishing ventures with independent quota holders" (Anon. 1997, p19). Typically the Namibian company to which the quota is allocated, has a 51% interest in the joint venture arrangement while Pescanova has a 49% interest.

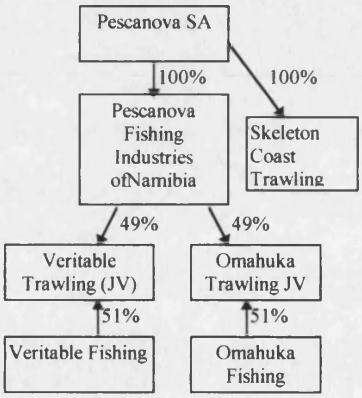

Figure 30: Pescanova's ownership and examples of joint venture arrangements. Source of data: Company registers of members and the Register of Companies (MTI Register).

Pescanova recognises that it is not necessary to hold a majority of the shares in order gain the benefit of the rent and that it could be to the advantage of Pescanova to "Namibianise", because of the additional rebates that can be made by a company claiming to be 51% Namibian owned. It is thus in the process of restructuring its shareholdings and operations. It has created a new company, NovaNam Ltd, to which all the Namibian fishing interests of the Spanish parent company, Pescanova SA, have been transferred (Pescanova 1997) and has "placed the NovaNam Preference Shares, convertible into Ordinary Shares, with a broad range of selected Namibian financial

institutions and individuals" (ibid.). These shares, together with those held by the recently created "NovaNam Staff Trust" place 51% of shares with Namibian shareholders (ibid.).

What appears in the small print of these new arrangements are what clearly matters. Pescanova, as a wholly owned Spanish Company, has been very successful in the Namibian fisheries sector. It has secured a very valuable hake quota representing about 19% of the total allocated quota and more than two and a half times the size of that of any other company (Stuttaford 1996, p77). It is under no apparent political pressure to Namibianise but would be able to claim a further rebate on the quota levy of N$200 per metric tonne if it does so. On the annual quota it has enjoyed for the last three years of 25837mt, this would mean an immediate N$5.167 million per year extra in profits, and, as quota levies stand, that much less collected by the state in quota levies. As Pescanova SA will continue to provide "considerable financial assistance, as well as managerial, technical and marketing support" (Pescanova 1997) there is nothing to stop it from so adjusting its charges for these services and the prices for hake paid to NovaNam by Pescanova SA of Spain to ensure that it gains the additional net benefit from the new arrangements. Pescanova SA (Spain) will retain control of Pescanova's Namibian interests through the 49% formal interest it will have in NovaNam, together with the votes it will exercise through shares allocated to the NovaNam Staff Trust.

A second large Spanish fishing company, Eduardo Vieira SA, took a different route . It bought a 49% share in Cadilu; 51% was owned by three Namibians in equal shares. The three Namibians concerned, Jose Luis Bastos, Manual De Conceicao Jarimba de Castro and Diamantino Rufino de Silva Correia, had previously held Spanish and Portuguese passports. Because Cadilu has a majority Namibian shareholding, it received a seven year right of exploitation for hake and a substantial hake quota. It also received a four year horse mackerel right. The shareholding of the three Namibians was subsequently sold, increasing the share in Cadilu of Eduardo Vieira SA to 83.3 %, with the remaining 16.7% being sold to the Commonwealth Development Corporation. The expectation of the company is, no doubt, that they will be treated no less favourably than Pescanova SA. The interests of Messrs Bastos, de Castro and Correia, following the sale of their shares in Cadilu, is depicted in Figure 31.

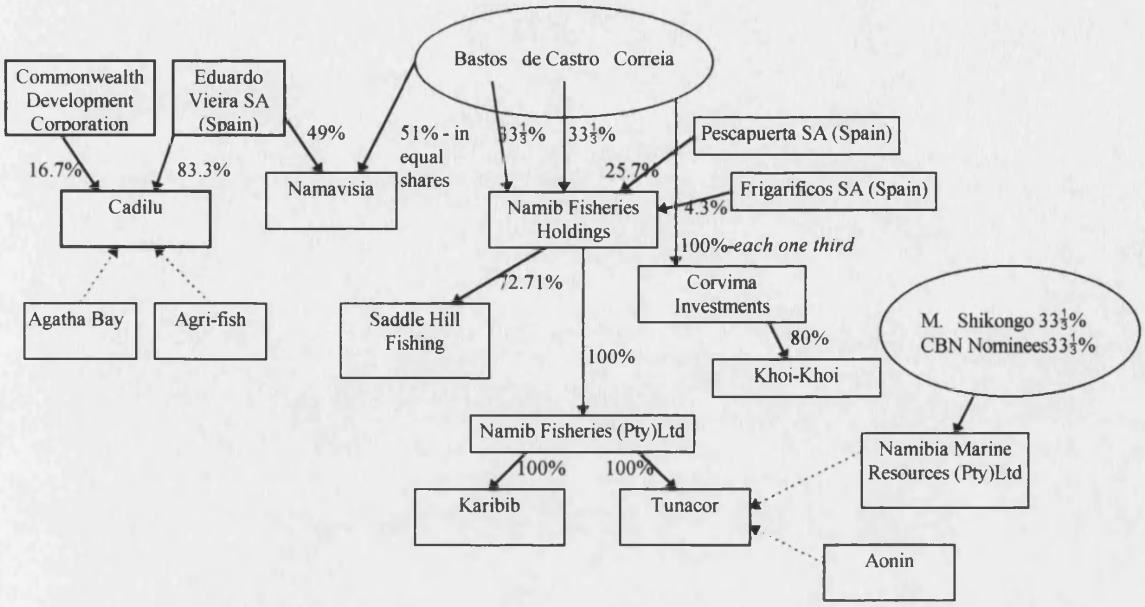

Figure 31: Namib Fisheries Holdings and associated companies. ·····▸ indicates delivery of catch.
Source of data: Company registers of members and Register of Companies.

The three Namibian fishing entrepreneurs, Bastos, de Castro and Correia, have continued with a joint venture arrangements with Eduardo Vieira SA, in the form of Namivisia Holdings (Pty) Ltd, the purpose of which is not yet clear, but is possibly in order to establish joint purchasing arrangements of shares in smaller companies so that the company purchased would be majority Namibian owned, thus taking advantage of the lower quota levies, but guaranteeing supply of quota to Eduardo Vieira SA.

Two of the three, Bastos and de Castro, each hold one-third of the shares in Namibian Fisheries Holdings. Pescapuerta SA of Spain holds 25.7% of the shares in this company and another Spanish company, Frigarificos Puerta Pardo SA, holds 4.3% in the company with the remaining 3.33% being held by three other Namibian individuals. The marketing is done through the two Spanish companies. This meets the objective of ensuring a supply to the companies in Spain which does not depend on auction markets in Spain. Namibian Fisheries Holdings gained control of Saddle Hill Fishing (Pty) Ltd through increasing its 45% share to 72.71%, in this way increasing the hake quota that it receives.

Bastos, de Castro and Correia have equal shares in a further company, Corvima Investments (Pty) Ltd. It is through this company that they have now gained control of one of the small newcomer companies, Khoi-Khoi Enterprises, which has a right of exploitation for tuna.

Barconoya SA of Spain, which does not have a right of exploitation and has not bought into such a right, has adopted a different strategy, focusing its efforts on joint venture arrangements which ensure the supply of hake to its processing plants in Spain (Figure 32). It has established a Namibian subsidiary, Oya Namibia (Pty) Ltd. Like Pescanova, it has established joint venture arrangements with Namibian companies in which Oya Namibia (Pty) Ltd holds 49% of the shares and the Namibian company has 51% of the shares. It should be noted that it has established such arrangements with the two Namibian companies, Eros Fishing and Mangetti Fisheries, controlled by Zebra Holdings, a company in which SWAPO, the governing party in Namibia, is said to have an interest (Coetzee, 1994). In addition, it has established joint venture arrangements with, Oryx Fishing and possibly also with Rundu Fishing.

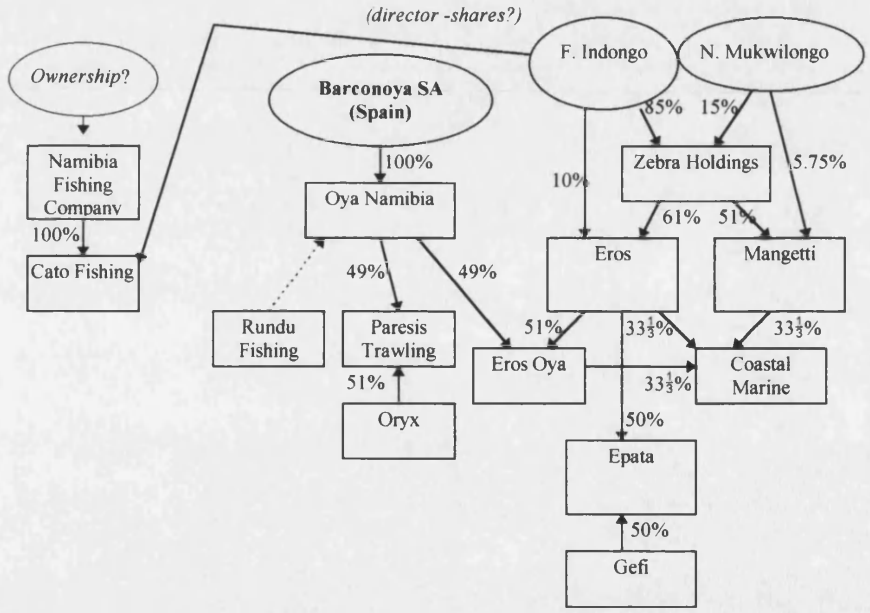

Figure 32: Oya Namibia's interests in the Namibian fisheries sector. Source of data: Company Registers of Members; Register of Companies.

6.2 The South African Companies

South African ownership of the Namibian fishing industry remains significant, although it is now a lot more difficult to identify, primarily because of the increased use of nominee shareholders both in Namibia and South Africa and a more complex structure which results in ownership and control of the industry being considerably less transparent.

Two further major South African companies not yet reviewed require specific comment. Sea Harvest Corporation of Namibia, now owned 49% by Sea Harvest Corporation of South Africa and 37% by nominees, had its application for a right of exploitation rejected in 1993 because it had never invested in Namibia despite having operated in Namibian waters for many years. Subsequently it purchase Lalandii (Pty) Ltd and Blue Angra (Pty) Ltd, two Namibian companies holding hake rights. It probably also has an interest in Diaz Fishing (see discussion in 4.2.1). It has a link with the Oceana Fishing Group, owners of Erongo Sea Products, through C.G. Smiths Foods (Figure 33).

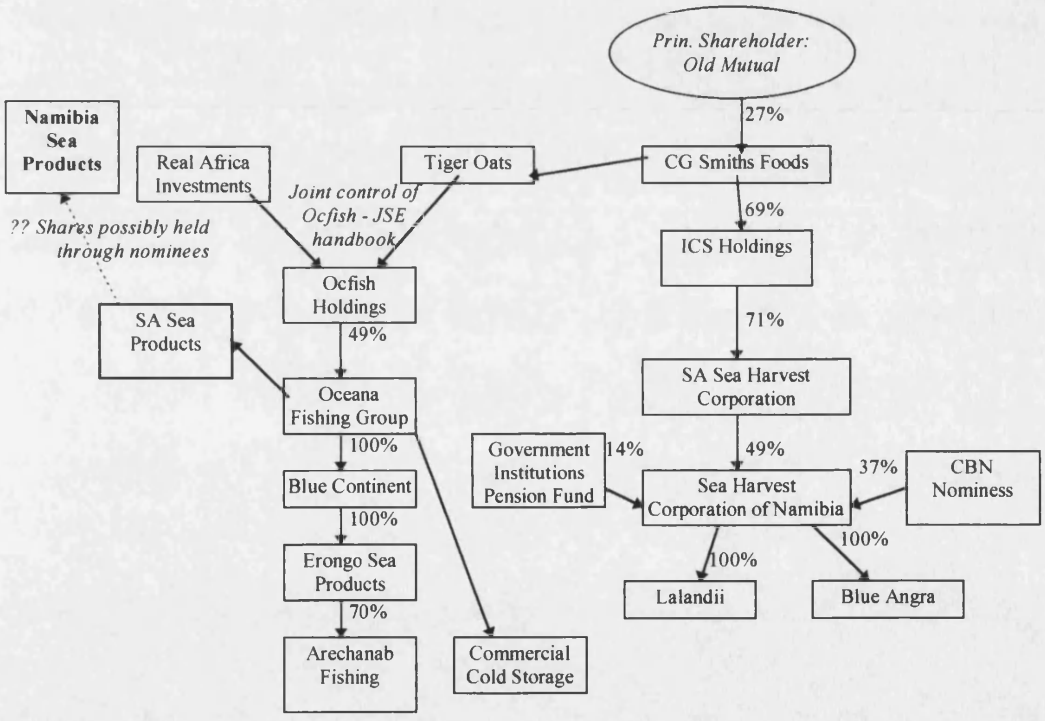

Figure 33: Ownership of the Sea Harvest Corporation of Namibia. Note the link to Oceana Fishing Group, through CG Smith Foods; a subsidiary of Oceana, SA Sea Products, was the parent company of the Namsea, discussed above (Figure 28) and may well still have a significant stake in that company through the nominee shareholders.

Gendev of Namibia (Ltd), are controlled by Suiderland, a South African investment holding company. It has substantial interests in the pilchard industry and has a joint venture company, Genor Fishing (Pty) Ltd, with the New Zealand company, Sealord Products Ltd, with rights in the new orange roughy fishery.

Although direct South African share ownership is still very significant, it is not as great, in proportional terms, as it was prior to Namibia's independence. This is not the result of a magnanimous forfeiture by South African fishing companies of benefit from Namibian fisheries resources, but a recognition of the fact that ownership of a company harvesting a renewable natural resource is not the only route to extracting value from that resource. Power and control are more important.

It is true that there are cases where substantial South African interests were sold out to Namibian companies such as the sale of Tunacor to Namib Fisheries Holdings which appeared to be the result of a belief on the part of Fedfood (now Foodcor) that the company did not have a future in Namibia because of Namibia's emerging fisheries policy, for which reason, it decided to divest itself of this company (de Castro 1995).

However, on the whole, a substantial South African interest has remained. In some cases control of the South African Company has changed hands. The Kuttel family, directly and indirectly are now the principal shareholders of Namsea and Namfish, for example. Prior to that a private Norwegian fishing company briefly secured control of the group but sold those shares, in the face of heavy criticism as the Norwegian Government was giving Namibia technical assistance in the fisheries sector.

In instances where a majority shareholding has been made over to the Namibian companies, power and control have generally not changed hands. Ownership becomes the less significant factor if it is within the power of the controlling company to ensure the capture of the rent through the chartering of vessels, provision of management services and through marketing.

If powerful incentives exist for foreign companies to Namibianise, they will do so. These incentives do exist. Companies that Namibianise will be considered more favourably in the longer run than those that do not, particularly when renewal of rights of exploitation takes place. Those companies that appear to embrace an alliance with those "who have been socially, economically or

educationally disadvantaged by discriminatory laws or practices" (Namibia 1993a Regulation 2(a)), gain considerable political credit which they expect will be translated into larger quotas, as the distribution of quota is the responsibility of the Minister of Fisheries and Marine Resources in consultation with his cabinet colleagues. In addition, levy rebates are available to those which do Namibianise, as was explained above in the case of Pescanova (section 5.1).

The name of the game is control rather than ownership. Thus the examples of the Premier Group, which controls Ethosa Fishing, I&J which controls Kuiseb Fish Products, the involvement of Sea Harvest Corporation of South Africa through its Namibian subsidiary, Sea Harvest Corporation of Namibia and the Namsea/Namfish Group all formally have a majority Namibian ownership or are accepted as having majority Namibian ownership. But control and the power to determine the distribution of profit, including any generated through resource rent capture, remains in the hands of these South African companies and individuals.

Additional leverage is gained by locking in as shareholders interests which create for the company considerable potential political leverage. For example, several companies have seized the opportunity of an investment by the Government Institutions Pensions Fund. Public Service employment, which accounts for an estimated 29.7% of formal employment in Namibia (World Bank 1991, p26), makes use of this fund. If a company with a significant investment by the Pension Fund claimed that its fortunes were not what they ought to be because of too low a quota being granted to the company by Government, the political leverage exerted through the Pension Fund to increase the company's quota could be quite considerable.

Ownership is obviously important in determining who gets the profit accruing from a company's activities, including abnormal profit arising from resource rent capture. It does not, however, ultimately decide the distribution of benefits. If it is within the power of one interest group to capture the rent through an adjustment of costs for inputs or price for outputs, then the ownership is inconsequential in relation to rent capture. Thus ownership in the industry is only significant if it is accompanied by power within the industry.

7. Conclusion

The purpose in this chapter has been to illustrate the inadequacy of share ownership of fishing companies in the Namibian fishing industry as a means of directing greater benefit from the

resource to Namibia and Namibians. Namibia has gained far more than it did before independence from its fisheries resources so that, in this respect, a partial success must be acknowledged. However, it does appear that there remains much more to be gained for Namibians from its fisheries resources.

This chapter has examined evidence on who really benefits from Namibia's fisheries resources. This is an important issue for several reasons. Firstly, as a renewable common-pool resource, fisheries resources are subject to the tendency towards over-exploitation and the dissipation of resource rents. Whether uncollected resource rents have been dissipated through over capacity or are accruing to companies or individuals as abnormal profits, they are lost to the benefit of the people as a whole to whom they belong. Secondly, the Namibian state has a constitutional obligation to ensure that "living natural resources are utilised on a sustainable basis for the benefit of Namibians both present and future" (Namibia 1990a, 95(1) (l)). At the very least, it can be argued, Namibians should expect the benefit of the resource rents accruing in some way to themselves. The fisheries policy, given expression through the Sea Fisheries Act and the associated Sea Fisheries Regulations, recognises this obligation and seeks to define the primary beneficiaries as people "who have been socially, economically or educationally disadvantaged" by past apartheid practices.

It was demonstrated in the chapter that Namibians were not getting the extent of benefit from these resources that at first sight would appear to be the case, that keeping adequate track of beneficial ownership of the companies is problematic, and that the power relationships within the industry are more important from the perspective of distribution of resource rents than is company ownership.

Ownership of companies granted rights of exploitation and associated quotas is insufficient to guarantee a transfer of benefit from this resource to the company. This depends primarily on relationships of power and control within the fishing industry. It was shown in the case of Oya Namibia, a wholly owned Spanish company operating in Namibia, that it is possible for a company to not have a right of exploitation and, consequently, not receive any quota, but yet launch a sizeable and growing operation within Namibia. This company appears to conduct its entire operation through joint venture arrangements. It was argued that the costing of services rendered to the joint venture and prices paid for the product can enable a company with power in the industry amply to compensate for extra revenue that may otherwise have accumulated from being granted a quota. To have any idea as to who is getting the benefit of the quota it would be necessary to have

a detailed knowledge, not only of shareholding but also of the costs and conditions of chartering of vessels, marketing arrangements and applicable prices and the cost of services rendered in each case within the industry. It is not practical for government adequately to undertake such a task.

It was shown that both South African and Spanish companies, in particular, have managed to re-establish their dominance of Namibia's fishing industry. There has been some limited success in Namibianisation of the industry, but much of this appears to be a superficial gesture on the part of companies undertaken in order to qualify for levy rebates and to find political favour with the Government which decides on allocation of rights of exploitation and the associated quota. Control of the industry remains in the hands of the large, powerful and mostly foreign companies in the industry.

There has also been considerable consolidation in the fishing industry largely through the purchase by larger companies of a controlling interest in the smaller quota holders. The smaller companies that have grown, such as Overberg Fishing Company (Pty) Ltd, have been able to do so because of the access that they have to finance and management capacity.

Two moves need to be made by Government:

1. Firstly, a structure needs to be created to promote the development of small Namibian companies in a manner that enables them to avoid dependence on large established enterprises that have the capacity to inhibit the development of the smaller companies or even force them out of the industry. Financing facilities, management and technical advice and market data and advice need to be more readily available to the smaller companies. A proposal to achieve this objective is made in the concluding chapter.

2. The second is to collect a greater proportion of the resource rent though the quota levies. In this way it becomes possible to direct expenditure more accurately where it is needed and offers the structure of formal subsidies that more readily demands transparency and accountability. This may be for the purpose of supporting companies through a start-up phase of establishing themselves or developing the necessary managerial, technical and financial competence in order to be profitable in export markets. It should also mean creating and facilitating a financial framework within which the new, emerging companies would be able to establish themselves

without being dependent on larger, established companies which may have ulterior motives in offering them 'help'.

Chapter Nine

CONCLUSION

The successful management of large marine fisheries has presented itself as a seemingly intractable problem the world over. Much of this arises from the common pool nature of the resource, the variable and often unpredictable environment from which the resource is drawn and the paucity of scientific knowledge of commercially exploited stocks.

Management of the resource is also profoundly influenced by the trans-boundary nature of this common pool resource and the consequent need for action beyond the confines of the jurisdiction of a single state in order to tackle problems that occur.

The multiplicity of factors that need to be taken into consideration in the management of a large marine fisheries calls for a complex array of management tools. Any expectations that one simple idea, such as individual transferable quotas (ITQs), is able to resolve the fundamental problems arising in marine fisheries are misplaced. Rather, an amalgam of different regulatory techniques is needed, depending on the circumstances of each fishery.

This concluding chapter will review the circumstances and performance of the Namibian fisheries sector and its management drawing together the evidence discussed in earlier chapters. The extent to which the objectives of fisheries policy have been met will be discussed in the context of the management approach adopted by the Namibian Government and the regulatory techniques used in order to achieve its objectives. Finally, recommendations are made for improving the system of management, in the hope that they will make a small contribution to building a more robust, sustainable and more productive fisheries sector and that the benefits of this valuable resource will accrue to those Namibians who suffered the greatest deprivation from the system of apartheid and who still live in abject poverty (Ch.1, 1.2).

1. The nature of the problem

Two major issues confronted the Namibian Government in the fisheries sector. The first was the serious depletion of most of the country's valuable fish stocks prior to independence and the urgent

need to address this problem by creating the conditions in which the stocks could be rebuilt. The second concerned how to achieve a more equitable distribution of benefit from the resource among Namibia's people, who would have access to these resources and how they could best contribute to the development of Namibia. The two fundamental objectives of Government policy thus became rebuilding the fish stocks, then ensuring that harvesting takes place at a long term optimum level and ensuring that, primarily, the benefit of the resource would accrue to Namibians, particularly those who still live in poverty as a result of the apartheid system.

1.1 Fundamental lesson of the bio-economic model

The basic bio-economic model of a fishery offers a means of examining what happens to a fishery under conditions of open access. Underpinning the model are a considerable set of assumptions which, in general, treat as static an array of factors that may influence stock growth and which moderate human predation of the stocks. These assumptions limit the usefulness of the model as there are many factors that influence spawning, stock growth and survival, some of which are known but many of which are unknown or not well understood. But the model does offer a means of examining resource rent, and structures our understanding of the ease with which overcapacity can develop, which absorbs the available resource rent.

When the Namibian fisheries sector is examined, it offers a classical example of this process taking place. Although the fishing policy White Paper emphasised the need to limit fishing effort (Namibia 1991a, p32), it also made clear that quotas would be granted to companies owning their own vessels and that the quotas would relate to particular vessels. Thus an incentive was created to purchase vessels and to invest in as much fishing effort as possible, reinforcing the tendency towards overcapacity.

The White Paper also identified a need to avoid overcapacity developing in processing facilities (ibid., p35) but at the same time proposed a quota levy rebate of N$200 per tonne to companies that established possessing facilities on land (ibid., p37), establishing an incentive to build processing capacity on land (see also MFMR, 1993a). Further indications were given that investment in processing facilities or vessels would be rewarded with longer term rights of exploitation and appropriate quotas (MFMR 1993a, para. 12,13). The race for fish was being played out in a race for quota, the qualification for which was ownership of vessels and processing plants.

The model demonstrates that where there is competition among participants in a fishery, in this case to secure fishing quota, then there will be a tendency to divert some resource rent in order to secure quota until the point is reached when all the resource rent is absorbed. Although Government did not wish excess capacity to develop, it put into place incentives that encouraged that process. This was done to create a Namibian based fisheries sector with onshore processing that could employ more people than do sea based operations. It was not anticipated how such incentives would be inclined to exacerbate a tendency already existing towards the development of overcapacity arising from the common pool nature of fisheries.

It was shown in Chapter 7 that major damage has now been done. Capacity well in excess of what is needed to harvest the TACs exists. This serves as a considerable pressure on management to maintain the TAC at a level higher than that recommended by the scientists out of fear of bankruptcies. These incentives exacerbating the tendency towards overcapacity should be removed.

It is arguable that if, in the first instance, quota levies had been considerably higher than they have been, then over-capacity would not have developed to the extent that it has done, as the incentive of securing the uncollected resource rent and thus providing additional abnormal profit, would not have existed. Quota levies could be raised to equate more closely the resource rent generated for each fishery . This would both serve to reduce the incentive towards over-capacity and would make possible the channelling of that rent towards more equitable usage.

2. Rebuilding over-exploited stocks: problem of overcapacity

The new Namibian Government at independence recognised the serious nature of the depletion of Namibia's most important commercial fish stocks. All evidence points to a sincere commitment on the part of the post-independence government to rebuild the stocks so they could be exploited at an optimal level in the future. The call for a moratorium on fishing for hake before the EEZ was declared, the crackdown on illegal fishing once jurisdiction was established, and the readiness to reduce drastically the TAC, despite the problems of timing and extent of the cut-backs (see Ch. 7), all indicated a commitment to this objective.

Several decisive moves were made by the new Government of Namibia after independence which rightly earned it praise from the Namibian based industry and the international fisheries press to the FAO and World Bank. The first quotas set after independence, namely those for 1991, reduced the

hake catch from an estimated 197 000 tonnes in 1990 to 60 000 tonnes and the pilchard catch down from 90 000 tonnes to 60 000 tonnes. The following year when the extent of the depletion of the rock lobster stock was recognised, the TAC for this species was reduced from 1200 tonnes in 1990/1 to 100 tonnes in 1991/2.

The question arises as to what then went wrong which resulted in the fish stocks, in most cases, not recovering and, in the case of pilchard, falling to perhaps their most depleted level ever.

2.1 Accommodating El Niño

Although it is acknowledged in the White Paper on fisheries policy that, historically, stock fluctuations take place in the Benguela ecosystem (Namibia 1991a, p4), there is virtually no discussion of the significance of managing the fisheries through such events. Instead, biomass estimates over a period of ten years suggest that a linear improvement was expected, reaching a maximum sustainable level in that period. While the upwelling process was working well and the marine conditions were conducive to successful spawning and growth, the stocks began to recover well. Had the Benguela Niño not occurred in 1994/5, the Ministry would still have been enjoying credit for the growth of the stocks.

The discussion in Chapter 2 establishes that while it is relatively easy to manage the stock though periods during which favourable environmental conditions exist, the real test of good management occurs when conditions are unfavourable to spawning and stock growth. A primary focus of fisheries policy ought to be acknowledging this and establishing as a target the structuring of the industry in such a way that it is robust enough to accommodate the shock of a warm event, avoiding having to make a choice between economic collapse or risking the survival of species and thus enabling an economic optimal to be met in the long term.

Perhaps the biggest single factor that needs to be considered in relation to the conservation and rebuilding of Namibia's fish stocks is the impact of the El Niño/Southern Oscillation phenomenon on Namibia's marine resources. It exposes the paucity of knowledge about fish stocks and raises the question of dealing with uncertainty in fisheries management.

When a warm event linked to the El Niño/Southern Oscillation phenomenon occurs, marine conditions are described as abnormal; when it ends marine conditions are described as having returned to normal. While it is true that they are abnormal, in as much as historically in most years

Namibia's fisheries have not suffered from an extensive warm event, such an event seems to be regarded by the industry as bringing conditions that ought not to have occurred and that planning ought not have accommodated. Attitudes need to change towards such events which need to be accepted as a normal and expected part of a long term cycle. This is a necessary pre-requisite to building a more robust industry, flexible enough to accommodate changes in species abundance without risking economic collapse.

It is now well established in the scientific community and elsewhere that such warm events are a normal part of a long term cycle experienced by the Benguela ecosystem. The link between the El Niño/Southern Oscillation phenomenon and the Benguela Niño is recognised, although there remains much that is still not understood. The nature and impact of this phenomenon was discussed in Chapter 2. It was noted that the recorded observations are not sufficiently extensive to be able to assert without reservation that the Benguela Niño necessarily follows the El Niño/Southern Oscillation event in the Pacific region or that the intensity of the Benguela event can be predicted from the intensity of the Pacific event. However, the warm Benguela events have tended to follow 12-18 months behind the warm events that develop in the Pacific. The evidence is sufficiently strong for action to be taken in relation to predictions based upon observations made upon it in the Pacific. Acceptance of the precautionary principle demands that this be done.

Two issues arise from this: the first is that the economics of the fleet and processing capacity need to be addressed to prevent the current waste of resource rent on sub-optimal excess fleet and processing capacity, particularly in view of the smaller capacity that is optimal in conditions of great variability. The second issue is to make increased use of the forecasting of Benguela events; had the development of the ENSO in the Pacific been noted, peaking there at the end of 1991/early 1992, then the development of the Benguela Niño in 1993/94 ought not have come as a surprise. Processing capacity may not have expanded just in time for the onset of a warm event and the collapse of stocks leading to a financial crisis for many companies.

This matter still calls for urgent action. Monitoring of sea surface temperatures (SST) and atmospheric pressure in the Pacific, primary data used in the Southern Oscillation Index (SOI), indicates that the strongest El Niño ever recorded was developing in mid-1997 (see Figure 34 below). The South African Weather Bureau has commented that it was detecting early signs of the appearance of El Niño linked weather patterns, in the form of early good rains in southern Africa followed by sweltering heat (Nampa-Reuters 2 October 1997). If the pattern is followed, rains will

fail in southern African during the southern hemisphere summer of 1997/8 and there will be a warm water event occurring in the Benguela ecosystem in 1999.

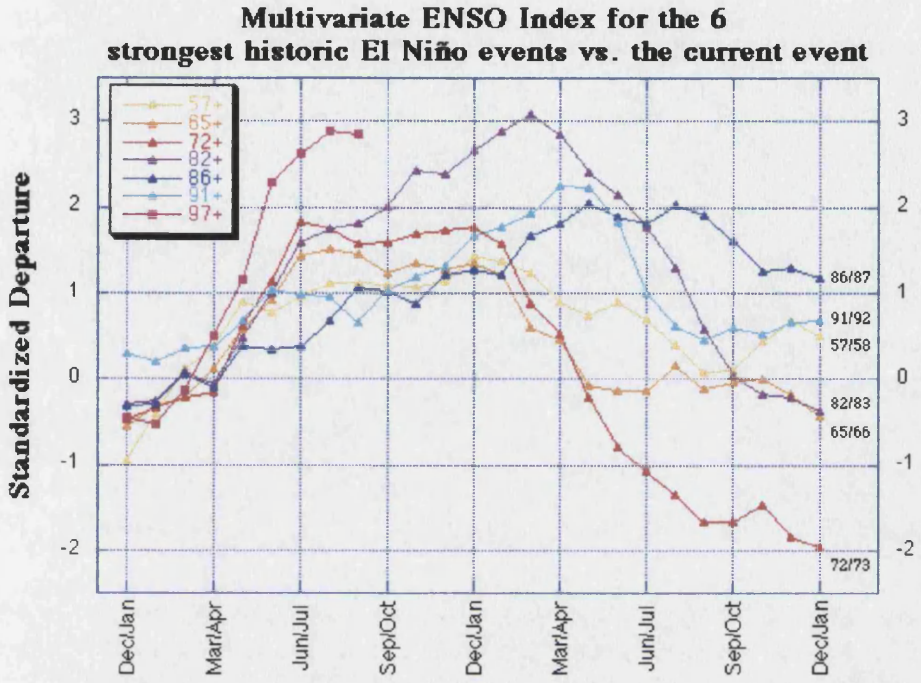

Figure 34: Development of the 1997 El Niño compared to six previous most severe El Niños recorded. Source: NOAA 1997 (copyright Klaus Wolter and Michael Timlin).

As the high mortality rates for pilchard have already struck a heavy blow to the pilchard stock, it is imperative that there be a complete moratorium on pilchard fishing and to begin the process of down-sizing the fishing industry. Further argument in favour of a pilchard fishing moratorium and on reducing capacity are presented below. As biomass is so low this would offer the best hope of the stock surviving the shock that the a Benguela Niño in 1999 could bring.

Government has the choice of making these moves now, with the undesirable impact of increased unemployment, but at least with improved prospects of a robust industry within a few years or of not implementing these cutbacks and facing unemployment in the industry for a lot longer as a result of even more serious stock depletion.

2.2 Need for flexibility

Historically there has been too little recognition of the importance of ecosystem resilience, "the ability of a system to maintain its structure and patterns of behaviour in the face of disturbance" (Hollings 1986, p296). If the resilience of the ecosystem is lowered by excessive fishing, then the ecosystem could flip to a new equilibrium in which previously abundant species may have only a minor part (Laevastu and Larkins 1981, p77). While caution is needed and more vigorous application of the precautionary principle advisable, evidence does exist that for most major stocks recovery is possible (Myers et al. 1995, pp1106-1108), but it should not be taken for granted. Decisions on the TAC for pilchard and hake have been influenced by wishing to minimise current economic damage to the industry, an entirely legitimate objective. It remains important, however, to ensure that resilience is maintained, as the economist Kenneth Arrow and others asserted in their extensively noted article in Science, "even though the limits on the nature and scale of economic activities thus required are necessarily uncertain" (Arrow et al. 1995, pp520-521).

2.3 Reducing overcapacity

Accommodating the variability of the resource requires that the economic system also be resilient. A pilchard TAC of 40 000 tonnes and 20 000 tonnes instead of zero was set in 1995 and 1996 respectively because the industry was not considered resilient enough to withstand the shock of a zero TAC. Capacity to adjust to changes in the availability of the resource requires reducing and then strictly limiting vessel and processing capacity. It may also require increased research into ways in which processing plants may utilise other species, such as the robust mackerel stock in the absence of pilchard.

3. The problem of who benefits from the resource

It was shown that a significant portion of Namibia's population lives in absolute poverty and that there exists an extremely poor distribution of wealth in Namibian society. The fisheries sector was seen as offering a less problematic option for achieving some degree of redistribution because of the overwhelming presence of foreign interests in the sector before independence. In contrast, redistributing commercial farm land is a highly charged issue in Namibia and achieving the objective through the tax system, it is argued, would risk a disincentive effect.

Reflecting the constitutional provision that "living natural resources are utilised on a sustainable basis for the benefit of Namibians" (Namibia 1990a, Article 95(1)), the Namibian Government established a policy and legislative framework for the fisheries sector aimed at meeting this target. The implementation has fallen well short of achieving this objective, primarily because the vehicle chosen for distributing much of the resource rent was share ownership by Namibians in fishing companies granted rights of exploitation and quota. It was established in Chapter 8 that this has not produced satisfactory results.

3.1 The post-independence development of the fishing industry

At the core of the industry in 1990 was a tightly knit cartel of mainly South African companies. These companies dominated the in-shore fisheries, namely the pelagic fishery and the rock lobster fishery. The off-shore fisheries, on the whole, came under the entirely separate, open-access, regime of the high seas.

There seemed to be little appreciation of the implications of public ownership of the resource that was being harvested. The industry appeared to regard the resource as rightfully theirs to exploit and from which to accumulate the benefit. Only a research levy was paid before independence; no quota or catch levy was paid. The notion that these fees should reflect the rents associated with the fish stock, and were that part of the cost of fishing associated with using a publicly owned natural capital resource, on the whole did not exist. The quota fees now paid are still regarded very much in this way.

The major off-shore fisheries were the bottom trawl fishery, targeting demersal hake, and the mid-water trawl fishery, targeting horse mackerel. The bottom trawl fishery was overwhelmingly dominated by a large fleet of Spanish freezer trawlers. Namibian based trawlers began to participate in this fishery to a minor extent during the 1980s. The horse mackerel fishery was dominated by a fleet of large Soviet mid-water factory trawlers. Namibian based companies did not participate in this fishery. Japanese interests dominated the high unit value but relatively minor deep sea crab and tuna fisheries, in Namibia's offshore waters. Thus when the Namibian Government declared an exclusive economic zone, it claimed rights over a very large natural resource base which had not been previously available to Namibia.

Expectations among Namibian based companies were high and the process of positioning themselves to exploit these resources began in earnest. In competition with the established Namibian based companies, black Namibian entrepreneurs, who had been effectively excluded from the fisheries sector by the practice of the apartheid system, wanted to participate in the wealth to be gained from the fishery. Namibians realised that there were valuable resources to be found in their waters and were demanding a more just share of those resources. Thus from the very early months of the establishment of a post-independence government, new Namibian companies were granted rights to participate in the fisheries.

It was soon realised that a fisheries policy was needed in order to guide a coherent development of the fisheries sector. Criteria were needed in order systematically to select the companies which would be allowed access to the fisheries. Policy objectives needed to be identified in order to shape the drafting of a new Sea Fisheries Act and Fisheries Regulations. By the end of 1991 an exclusive economic zone had been proclaimed and jurisdiction effectively asserted over this zone. The new fisheries policy had been agreed and published in a White Paper. Based on the policies and principles of the White Paper, the new Sea Fisheries Act was gazetted in 1992 and, in early 1993, the new Sea Fisheries Regulations arising from the new Act were published. The rights of the pre-independence set of concessionaires terminated at the end of 1993 and the new policies and criteria were used to guide the granting of new rights of exploitation to come into effect in 1994.

Foreign companies based in Namibia sensed that they would gain considerable advantage from nominal 51% Namibian ownership and so most of them worked to ensure a re-arrangements of their shareholdings. This was part of an offensive by the established companies to gain favour with the new Namibian government in preparation for new rights of exploitation being granted for the post-1993 period.

3.2 Distribution through share holdings

The significance of this discussion lies in the fact that, associated with a right and a quota, is resource rent theoretically accruing to the holders of the quota. It was argued that this resource rent should be regarded as a subsidy to the company (Ch.3, 1.2.3). As the system currently works, it may accrue as abnormal profit if it is not wasted on financing excess capacity.

It was argued in chapter 8 that, in the first instance, those that will take the initiative to form companies on the whole will not be the poorest in society as it requires a degree of literacy, numeracy and knowledge of how the system works to successfully make an application for a right of exploitation. Only a relatively small portion of the population would be aware of the value of securing such a right and its associated quota. The process of selection of rights holders excluded, in effect, the poorest and most deprived of Namibia's population.

On the whole it is the handful of large shareholders to whom most of the resource rent accrues. Chapter 8 demonstrated that, even among the relatively small number of shareholders of fishing companies in Namibia, a mere handful have a disproportionately large share of the resource rents accruing to them.

The shares of a significant number of the newcomer companies had been bought outright by one or other of the larger established companies or they had gained a majority controlling share in those companies. In some cases the majority of the shares of a company had been bought by one or other of the existing shareholders. In some important cases it is not possible to discover who the beneficial shareholders of a particular company are because of the use of nominee shareholders. All this one would expect to see in an industry such as this. It is only significant because of the implications for the allocation of resource rent.

It was also shown in Chapter 8 that receiving a quota does not guarantee that the recipient company will be the beneficiary of the resource rent. This depends on the relative position of power within in the industry. The smaller companies, with less power in the industry, tend on the whole to lose the resource rent, or a sizeable proportion of it, to the larger companies.

Thus, to attempt to distribute the subsidy of resource rents through the distribution of shares in companies within the fishing industry is bound to be very inadequate. The resource rent primarily goes to the larger and more powerful companies within the industry and accrues on the whole to the relatively more wealthy among the shareholders.

Competition existed for the uncollected resource rent because of its existence within the industry. It would appear that in much of the industry resource rent is now being absorbed by the financing of excess capacity.

Over time it is important that this resource rent be collected by the state both in order for the state to direct it towards the general good and in order to make a contribution to the regulatory system by removing, to a degree, the large incentive that exists to develop overcapacity.

3.3 Insignificance of geographic origins of shareholders

In granting rights of exploitation, consideration was given to the geographical distribution within Namibia of the particular communities within which the fishing companies are theoretically rooted. This was done in order to ensure a fair distribution of the benefits of the fishing industry to communities across the whole of Namibia and to avoid favouring one over another.

Two problems arise from this. The first is that some companies that claimed to have roots among a particular community may have exploited distant roots because they believed it most unlikely that any other application for a right would have been forthcoming from that particular part of the country. In this way they stood to be granted a right when their applications may have failed had they presented themselves as a group of shareholders primarily from Windhoek or Walvis Bay.

As a company does not necessarily collect the rent associated with its quota, it follows that the rent will not necessarily be available to the shareholders of the company or, indirectly, to the community from which the shareholders were drawn.

Companies applying for a right of exploitation were asked to indicate how the granting of a right and a quota to them would benefit the broader community. A common feature of many of the successful applications was that they had made over a percentage of the shares (usually 5% or 10%) to a charity or a trust fund that would be used for 'good causes', or that they intended to do so. The difficulty is that this is a totally hit and miss arrangement as it does not mean that any of the resource rent which the company may accrue, which belongs to the people as a whole, is used in an appropriate manner.

3.4 The significance and insignificance of nationality

It was amply illustrated how the manipulation of shares can achieve a majority Namibian shareholding without control of the company passing to the Namibian shareholders. Reference is made to the discussion on Kuiseb Fish Products, Etosha Fisheries Holdings and the new arrangements which Pescanova are putting in place, discussed in Chapter 8. In each of these

examples control rests with foreign companies and it is entirely within their power to set the charges for services rendered and establish the prices paid for output so that the change in formal ownership does not mean lower profits, including the benefit of the resource rent, being earned by the foreign company exercising control.

3.5 What of share ownership?

The above arguments point to a need to alter the method of distributing rent from the present position of cost-recovery plus a little rent being collected by the state in the form of the quota levy, to one in which close to all of the resource rent is collected by the state so that it may be used in a more targeted manner for the general good. This may include schemes to assist Namibian enterprises to establish themselves in the Namibian fishing industry through specific subsidies.

Political resistance can arise from the imposition of a tax such as a levy on quota. There is certainly opposition from fishing companies in Namibia to the existence of such levies. This should be expected as companies do not generally embrace taxation with enthusiasm. However, the Namibian Government has established the principle that a royalty, in the form of a quota levy, be charged for the use of fisheries resources. This is accepted by the industry and should be built upon. The levy needs to be increased in order to reflect the resource rent as closely as possible. The more these issue are exposed to public scrutiny, the greater will be public support for the recovery by Government of these rents which would counter industry pressure to reduce the quota levies.

4. Recognising the framework

The national management of marine fisheries needs to take into account a number of inter-linking factors. There is the global context within which the national fisheries management is nested, there are environmental factors and there are considerations of equity, both intra-temporal and inter-temporal.

4.1 Global

Chapter 5 examined the implications and impact of international law relating to fisheries on the management of the Namibian fisheries sector. It was argued that the problem of managing living

marine resources transcended national boundaries in part because of the trans-boundary nature of many fish stocks, and in part because of the mobility of fishing fleets.

Over-fishing has been a global phenomenon. A common concern among nations emerged over the depletion of fish stocks and the threatened free-for-all anticipated in deep sea mining. This brought about extensive and extended negotiations in the 1970s and early 1980s, resulting ultimately in the Law of the Sea Convention in 1982, which constitutes a comprehensive agreement concerning governance of the global marine commons.

With independence in 1990, Namibia seized at the opportunities associated with participation in this global system of governance, declared an exclusive economic zone and established a legal regime intended to be consistent with international law relating to fisheries. In effect, the Namibian state is a participant in a global system of governance. Management of Namibia's fisheries at a national level is nested in a global regime. The state thus has rights and obligations towards a wider world community, in addition to rights and obligations relating to the Namibian people, all of which need consideration in the system of management it adopts.

4.2 Environmental

It was argued that no mechanism not involving the state exists for ensuring the preservation of the large marine ecosystems, the rebuilding of fish stocks and ensuring the utilisation of such stocks in a manner that ensures optimal sustainable use indefinitely. There are examples, however, of management of relatively small common pool resources, including fisheries, by the appropriators of the resource. In particular, some protagonists of ITQs have claimed that the system could eventually lead to successful self-regulation. This has been contested by a number of empirical studies and it is even claimed in some of these studies that the system can lead to an increase in expenditure on policing of the fisheries. This is primarily the case because fishing companies operating in an ITQ system hold high capital assets; in addition to vessels and processing plants, ITQs, the value of which represent the discounted stream of benefits expected from resource rents, also become a capital asset. The capital tied up in holding an ITQ can be greater than the capital tied up in vessels and plant. Thus there is a greater tendency to risk the species, particularly where there is scientific doubt (and there usually is), rather than risk economic collapse of the company.

The obligation thus falls to the state, acting on behalf of present and future generations, to ensure that living marine resources, the benefit of which should accrue to the people as a whole, are used as close to an optimal, sustainable level as possible.

4.3 Equity

The Namibian Government recognised the need to use the fisheries sector to redistribute some wealth within Namibia. Although it was not explicitly stated in Government policy or other official statements, the context suggests that two objectives in the use of resource rent were intended. The first is to assist Namibian companies to secure a dominant position within the fisheries sector and the second to ensure that the primary beneficiaries of the fisheries sector would be the Namibian people, particularly those that suffered most under the apartheid system. The second of these has its roots in Article 95 of the Namibian Constitution.

The state identified the distribution of rights of exploitation primarily to Namibian companies as a means of achieving these objectives. This required state intervention. It became clear in the preceding chapter that only very limited success has been achieved. It does not mean that state intervention per se is inappropriate, but means that the state needs to reconsider the methods it has used to achieve its objectives.

5. Role of the state

The context within which a management system is established will profoundly influence the institutions that are created and the effectiveness with which the rules are implemented

Historically the management of the Namibian fisheries was dominated by a traditional, adversarial relationship between the industry and the Ministry; the state was distant and based well away from the coast from where it imposed an array of fees and restrictions on the industry. When the liberation movement, SWAPO, took power as the first government of an independent Namibia, uncertainty dominated the fishing industry as it contemplated its future. This was exacerbated by the disputed status of Walvis Bay and the offshore islands.

When the Namibian Government took decisive action to stop illegal fishing by unlicensed foreign vessels, their action was greeted with universal acclaim in Namibia. No doubt the established industry foresaw a gain for itself in such a move and aspiring Namibian companies expected to be

the net beneficiaries of the clamp down. With such a poor distribution of wealth and income in Namibia, the general expectation existed among the bulk of the population that this problem would be addressed by the incoming government. Using the tax system or redistributing land were seen by the Government as more sensitive issues likely to arouse considerable opposition and conflict. Expelling foreign fleets from Namibia's waters and claiming jurisdiction over the marine resources which they were harvesting, constituted a popular net gain for the country and did not arouse opposition from any part of Namibia's population. It was possible to grant rights to new Namibian companies wishing to enter the fisheries sector without excluding the existing companies from participation in the fishery.

It thus becomes abundantly clear that the state has a pivotal role to play in the management of large marine fisheries. The nature of common pool resources precludes the possibility of leaving regulation to the market (Chapters 4&5) although markets play an appropriate role in other respects. Lessons learned from the self-management of small common pool resources suggest that collective action, under certain circumstances, can achieve sustainable results, although it is not at all clear that these results are necessarily optimal. This suggests that a co-management approach to fisheries management may be the most appropriate road to follow.

6. A proposed step forward: Co-management, a change of culture

Co-management adopts the attributes of a self-management approach, with the state representing interests that have rights within the fisheries sector, such as the broader public and future generations, supporting and reinforcing, to a large measure, the collective action by participants in the sector. Co-management offers an approach to fisheries management as distinct from a method of regulation such as individual transferable quotas, taxation or input and output measures. It therefore does not exclude the use of techniques, such as the prohibition of certain input measures or, for that matter, the use of ITQs, as management tools available in the fishery.

Co-management, by its very nature, involves a change of culture within the industry away from the adversarial relationship between management and industry and towards a more co-operative relationship between the management authority and the industry. The Ministry has moved some distance in this direction, adopting a more open approach to management. It has invited the industry to participate in its annual research seminars, previously a closed event in which the Ministry's scientists and officials were closeted away for a couple of days to discuss scientific

developments in the fisheries. In 1995 the Ministry opened the seminar up to the industry and the response was so great that not all who wished to attend were able to be accommodated. This practice has continued and fisheries specific seminars have also been held as a forum for discussion between the Ministry and the industry.

The change of culture necessary for successful management also requires an active cultivation of an 'adaptive management' approach to management of the Namibian fisheries. This approach regards management of a renewable resource as an adaptive process (Walters 1986), confronting uncertainty by probing and deliberately experimenting, adapting the management as discoveries are made to improve its effectiveness. The MFMR, although not using this terminology, has shown a readiness to change and adapt. The Ministry responded to the discovery of the flaw in the process of decision-making regarding the TAC for pilchard by changing it to one much more consistent with the life cycle of the pilchard stock (Ch.7, 2.3). It has also adopted an approach to the management of the orange roughy stock that combines a cautious TAC for most of the stock while adopting a more probing, experimental strategy in one area (Ch.7, 1.1.4).

The pilchard stock has been managed in a particular way for nearly 20 years and perhaps needs reconsideration. Stocks have remained at very low levels during this period. The management approach has been to rebuild stocks but at the same time allow a small TAC to be caught in order to keep the industry alive. The experiment has not worked in two decades and it is necessary to acknowledge that the chances are that the pilchard stock will never be rebuilt in this way. It could well be that, by declaring a moratorium on fishing the stock, it will recover to a biomass level that will enable it to revive more rapidly when it is depleted, at a future point, by a warm water event.

This readiness to adjust and change needs to be promoted in the fisheries sector more generally, encouraging the development of a greater capacity by the industry to adjust to the shocks which the ecosystem will at time impose.

The change in culture needs also to embrace the precautionary principle which, if taken seriously, would alter the tendency of interpreting uncertain scientific data and analysis in its most optimistic form.

6.1 Co-management framework

A framework for encouraging greater interactive contact between the Ministry and the industry it manages is important for more effective and more efficient management.

The Sea Fisheries Advisory Council has only an advisory role and does not participate beyond that in the decision making process. Participants are not representative of the industry but are appointed by the Minister of Fisheries and Marine Resources. The make up of the Council was discussed in Chapter 6.

The Sea Fisheries Advisory Council should be made more representative of interest groups which have a stake in the sector. This should include better representation of the public interest. Although it may be argued that the elected Government represents the public interest, the MFMR is often placed under considerable pressure from the industry to set TACs at levels higher than those recommended by the scientists for short term economic reasons. If representatives of the public interest who are not part of the management authority were included in the Sea Fisheries Advisory Council they could be expected to serve as a counter to the pressure that presently exists from industry, as the long term health and productivity of the resource would be their concern. This could be achieved under the auspices of the Office of the Ombudsman as was argued in Chapter 6, section 4.8.

Encouraging wider public interest in and understanding of the fisheries could strengthen the MFMR in its role of stewardship of Namibia's marine resources and in ensuring a more equitable distribution of benefit from the resource.

The Ministry has gone some way towards encouraging closer interactive working relations between Ministry officials and the industry. This should be further encouraged, particularly between the scientists and the skippers and crews of the fishing vessels who are, after all, those in most constant contact with the resource in which both industry and Ministry are interested.

6.2 Coping with variability

In the past the fishing industry in Namibia has built up capacity and numbers employed during the years when the marine conditions are favourable, profits rise and resource rent accrues to the industry. When there is a downturn in the fishery due to poor marine conditions, then the industry

turns to government for relief, with the threat of unemployment looming as a spectre over the government's response. The resource rent collected by government in any one year will vary, among other things, according to the size of the catch. As the catch will vary with a build-up of stocks followed by a catastrophic collapse in the event of a major warm event in the Benguela, the average resource rent over a period should be regarded as the true rent. Clearly it would take a period of research and adjustment to establish a more accurate measure of the resource rent that the fisheries could generate.

A problem exists in that, if the extra rent is not collected during good years but left in the hands of the industry, it is likely to be treated as extra profit without provision being made for years of low production. In this case, workers would still be made redundant in poor years with the accompanying social, economic and political impacts. A means needs to be found of smoothing out the availability of benefit from the resource so as to lessen the impact of the boom and bust cycles that follow the fortunes of the ecosystem. This would enable both industry and Government to cope better with the drastic reductions in catch required when stocks collapse as a result of poor environmental conditions. Further research is needed to ensure that, whatever means decided upon, it would not be too problematic to implement and would meet the objectives for which it was established.

6.3 A support framework for 'newcomers' - National Fishing Corporation?

In the fisheries White Paper the need was recognised for new entrants into the fishing industry to gain access to credit, to technical advice, particularly in relation to the acquisition of vessels, fishing gear and other equipment, to advice on processing technology, access to market data and marketing strategies and advice on the screening and assessment of joint venture partners (Namibia, 1991a, p31). It was proposed that this function could be undertaken by a statutory institution with the suggested name of the Namibian Fisheries Development Corporation to be funded by charging fees for its services and supplemented by some State funding (ibid., p32).

The National Fisheries Corporation (discussed in Ch 6, section 5) was established in 1991 by act of parliament (Namibia 1991b). The Act made provision, *inter alia*, for the Corporation to fulfil the function envisaged in the White Paper (ibid., s5(1)(b)(c)). A potential problem in doing so is that it has functioned as any other large company within the Namibian fisheries sector and is identified as a competitor by the smaller companies in the industry. It is engaged in commercial activity through

its two subsidiaries, Seaflower White Fish (Pty) Ltd and Seaflower Rock Lobster (Pty) Ltd. In order to give it a purely support services character, these subsidiaries could be sold off, thus divesting the corporation of its direct operational involvement in the harvesting, processing and marketing of fish and fish products and focusing only on selling its support services.

A change of name, perhaps to the originally proposed Namibian Fisheries Development Corporation would help to give the Corporation a fresh start and enable it to fulfil the function envisaged for it in the White Paper. While a number of the newcomer companies have been irretrievably swallowed up by the established companies within the industry, there are some that have not, and could still do with this type of support. In addition, companies that no longer meet the criteria for which they were originally granted rights of exploitation and a quota, because they have been bought out by the established companies in the industry, may not have the rights renewed when they become due for renewal. If the Government is consistent in its policy of granting rights of exploitation, then more newcomers will enter the industry and be in need of the services that such a National Fisheries Development Corporation could offer.

The feasibility of such a venture would need to be studied more closely to ensure that there is sufficient demand for the services that the Corporation would offer.

6.4 Transparency

In any system in which decisions are made as a result of which the destination of resource rent may be altered, resources are likely to be devoted to rent seeking. The rent seeking may take both legal and illegal forms (Bhagwati 1982). The greater the possibility of these activities being publicly scrutinised, the less likely it is that corrupt practices will evolve. It is important that the practices of the Ministry and industry should be made much more transparent and subject to public accountability. This should apply to both the management authority and to the industry.

There is further reason for a greater degree of transparency in the industry. Namibia's marine resources, for all practical purposes, belong to the people as a whole. They are a publicly owned productive asset, with harvesting of surplus production being undertaken by the industry. The public thus have a right to monitor the process through which this happens and to ensure that no individual is excessively profiteering though participation in the industry.

6.4.1 Transparency in management

It is to the credit of the Ministry of Fisheries and Marine Resources that the management of Namibia's fisheries resources is a great deal more transparent than was previously the case. However, there are aspects of the Ministry's work that could fruitfully be made more transparent.

The scientific debates and the problems of weighing up the scientific advice and balancing it with conflicting short term economic needs, take place behind closed doors. The public have an interest in the health of a resource from which benefit should accrue for the general good. The scientific advice provided by the Ministry's scientific services to the Ministry should be made more publicly available. If decisions regarding TACs are made that conflict with the scientific advice then the debate should be more publicly conducted, revealing the costs and benefits of the decisions made.

This would make extra demands on the Ministry in order to handle it constructively but it would also provide a counter-balance to the considerable pressure often placed on the Ministry by industry to decide on a TAC in excess of what the Ministry's scientists may recommend. It may produce more public controversy but this is perhaps a price worth paying as it would sharpen up the debate and expose weaknesses of positions that might otherwise be taken. In general, there is a public view that the fisheries are a valuable resource for Namibia which must not be squandered or destroyed. Public exposure of the issues is likely to produce a powerful force in support of careful, conservative policies of rebuilding the fish stocks consistent with the precautionary principle.

6.4.2 Transparency in industry - publishing the figures

It would seem reasonable for the identities of beneficiaries of the use of a public resource to be placed in the public domain, so that any one at any time is able to have access to this information. It will never be possible to be sure that all resource rent is being collected by government because of the difficulties of assessing what exactly the resource rent is in the first instance. Approximations are used, making it likely at any time for there to remain some rent in the system.

Theoretically much of this information is in the public domain. The Register of Companies, maintained by the Ministry of Trade and Industry, hold details of the Directors of all registered companies and the address where the register of members of each company is held. It is an offence under the Companies Act (61) 1973 for a company to refuse to disclose its shareholding (South Africa 1973, s113(1)). However, the use of nominee shareholders and the incidence of foreign

registered companies as shareholders means that the provisions of the Companies Act in this respect is inadequate. The Ministry of Fisheries and Marine resources requires of companies that they disclose the beneficial shareholding of the company to the Ministry as part of the annual survey it makes of the industry. As this information is theoretically in the public domain, it would be constructive for the Ministry to make the information publicly available in the form of access to a database. This would help to make the ownership and control of the industry a lot easier to monitor by interested parties and therefore a lot more transparent. This could be done with relatively little extra work or expenditure.

Most participants in the fishing industry are constituted as private limited companies. Only a few are public companies. Unlike a public company, a private company is not obliged to lodge a copy of interim statements and annual financial statements with the Registrar of Companies (ibid., s302). It would seem reasonable that private companies in the fishing industry be obliged to disclose this information due to the public nature of the resource they are utilising. This would help to improve the accountability of the industry to the public and would promote greater transparency in the industry.

7. Conclusion

The Namibian fishing industry remains at a cross-roads. Much has been achieved by the post-independence Government towards establishing a more viable fisheries sector. The focus of this thesis has been on significant difficulties that have occurred in the Namibian fisheries sector. It would be disingenuous, however, not to emphasise the context of very considerable achievements by the Namibian MFMR.

In a few short years it put an end to a free-for-all taking place off its coast, established a creditable measure of control of the fisheries and now earns net revenue from this resource. The Ministry has committed to scientific research considerable extra resources, generated largely through a 'research levy' on catch, in order better to understand its fisheries resources and their environment. It has made good use of foreign technical assistance and has established institutions that considerably improve the collection and analysis of data, consultation with the industry and its involvement in scientific discussion.

The point remains, however, that ecosystem health is the foundation on which the industry is built. The resilience of the integrated ecological and economic systems is essential to make it possible for the industry and the economy generally to absorb the shocks which the ecosystem might produce; otherwise short term economic considerations may produce irresistible pressure to risk ecosystem resilience and the survival of species.

It is then incumbent on the state to ensure that this rent is captured for the benefit of those to whom it rightly belongs, the people of Namibia.

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