Review of the Distributive Aspects of Namibia's Fisheries Policy

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Disclaimer

The opinions presented are those of the authors and should not be regarded as the views of the Namibian Economic Policy Research Unit.
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<tbody>
<tr>
<td>EEZ</td>
<td>exclusive economic zone</td>
</tr>
<tr>
<td>MFMR</td>
<td>Ministry of Fisheries and Marine Resources</td>
</tr>
<tr>
<td>FAO</td>
<td>United Nations Food and Agricultural Organisation</td>
</tr>
<tr>
<td>ITQ</td>
<td>individual transferable quotas</td>
</tr>
<tr>
<td>MSY</td>
<td>maximum sustainable level</td>
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<tr>
<td>TAC</td>
<td>total allowable catch</td>
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1. Introduction

This report focuses on the examination of a particular aspect of Namibian Government policy in relation to fisheries, namely the distributional impact of the implementation of the post-independence fisheries policy that emerged in 1991. The report is not intended to be an overview of all aspects of government policy for the fisheries sector because to do so would require a study of far greater dimensions than is possible within the time and financial limitations of this research project. The particular area chosen for this study is one that appears problematic and, therefore, in need of attention, in the hope of this making a positive contribution ultimately to the development of Namibia.

There are other important aspects of the implementation of government policy for the fisheries sector that have been more widely acknowledged and have rightly attracted praise in the fisheries press and in the literature. Compared to the performance of many other fisheries around the world, Namibia has done extremely well in managing the fisheries sector since independence.

The Namibian Government at independence inherited a marine fisheries sector that had been overfished, over which there was only very limited control, and without even the possibility of adequate jurisdiction, as important maritime zones had not yet been lawfully declared in terms of the Law of the Sea Convention. The Government moved systematically, starting with the establishment of marine zones, policy formulation, a comprehensive legislative framework reflecting that policy and then on to implementation. In doing so it has successfully turned around a large marine fisheries that, for the most part, was a free-for-all before independence and has created an environment which has encouraged growth within a regulatory framework that is compatible with sustainable and optimal resource usage. For all this the Government deserves the considerable praise that it has received for its stewardship of Namibia’s marine fisheries.

This study raises the question as to who is benefiting from this success, as fisheries takes on an increasingly important role in the Namibian economy. This is an important issue, as Namibia's marine fisheries are a rich resource, arguably the most important renewable natural resource that Namibia has, capable of sustaining an important part of the development endeavour of Namibia. If the principal benefits of these resources are lost to Namibia or are accruing to those already well off or are being wasted in some other way, then Namibia is squandering a valuable opportunity for development and for the eradication of the extreme poverty that is still so widespread in Namibia.
2. Methodology

The approach of this study is to examine closely Government policy relating to the fisheries sector and, in the light of this, to examine the practice that seeks to implement that policy. The question is discussed of resource rent, or profits greater than "normal" profits, generated in the Namibian fisheries sector. This represents an important part of the benefit that could accrue to Namibia. The study examines the ownership of fishing companies and assesses the control exercised within the industry in an effort to gain a more informed picture of where this value is going.

2.1. Data collected

The data collected included statistical data relating to catch and price statistics, data on the control and ownership of the fishing industry and data relating to the fleet.

2.1.1. Economic data relating to the industry

Reliable economic data relating to the industry is difficult to obtain and there is a need for careful interpretation of what is available.

Four principal sources of data were used.

1. The Ministry of Fisheries and Marine Resources (MFMR) bases its economic analysis on its annual survey of the fishing industry as a means of collecting relevant data on the industry. This survey was initiated in 1994. Although the Sea Fisheries Act (Namibia 1992) requires of a quota holder that they supply the Permanent Secretary of the MFMR "with any information specified, and within a period mentioned" (Namibia 1992, s20(5), s25(5)), legal complications arose, which at the time of writing had not yet been resolved, preventing Government from making the supply of the data by the industry a legally binding requirement. The data sets collected by Government annually are at present neither complete nor can they be treated as a representative sample. Although the survey holds great promise of being a valuable tool in the long term, its usefulness is limited at present as a result of its legal status and the incomplete nature of the data collected.

For reasons of commercial confidentiality and the requirements of the Statistics Act (1976), the detailed data of particular companies cannot be quoted and only aggregates for a sub-sector can be publicly revealed. In some fisheries where there are very few companies involved, this has lead to aggregations
across sub-sectors being made that further undermine the usefulness of the data.

Data on the fishing fleet was obtained from the Register of Fishing Vessels (MFMR Register) maintained by the Ministry of Fisheries and Marine Resources, cross checked with, and supplemented by, data extracted from the Register of Ships (MWTC Register), maintained by the Directorate for Marine Affairs of the Ministry of Work, Transport and Communications.

2. External sources were used, such as the Food and Agricultural Organisation's Globefish European Fish Price Reports (FAO Globefish), which provided detailed price data on the Spanish market, Namibia's main hake market. The price data are specifically for the species of hake caught in Namibia.

2.1.2. Data on ownership and control of the industry

The list of 126 entities, mainly companies, that now have rights of exploitation plus a number of others which own licensed fishing vessels but are not rights holders formed the starting point of this investigation. Two pieces of information were obtained from the Register of Companies, held by the Ministry of Trade and Industry (MTI Register). The names of the directors of the companies and the address, in each case, where the company's register of members is held were extracted from the Register of Companies. The register of members is generally held by the company secretary, which in most cases, is supplied as a service by an associated company of the fishing company's auditors. The location of a company's register of members was not correct in approximately 20% of cases, although in some cases it was possible to trace the share register through the leads given by the company’s previous secretaries.

On the whole, the Registrar of Companies 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

1 The term 'register of members' is used in the Companies Act 61, 1973 (South Africa 1973), the applicable statute in Namibian law. 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 on request for public scrutiny.
register of members. This was repeated as far as possible until the beneficial shareholders were identified. 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.

2.2. Limitations of the study

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

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, using an analysis of supporting data on prices and costs for the industry. This demonstrates that significant resource rent is available to the industry either as abnormal profit, or for financing jobs in the industry, or for financing overcapacity. An attempt is made to gain a broad picture of the distribution of that rent.
3. Development of the Namibian fisheries policy

Government policy for the Namibian fishing industry can be traced from its constitutional roots, through the evolution of those constitutional principles in the 1991 White Paper on fisheries policy, to its expression in the legislation, which seeks to implement that policy. Aspects of the policy are further developed in a range of other statements and documents.

3.1. Constitutional basis of policy

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 1990a, Art.95 (f)).

Thus there is a constitutional obligation for 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.

3.2. The 1991 Fisheries White Paper

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 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, 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 paper identifies several secondary objectives flowing from these two principal objectives: it elaborates on the biological objective of long term optimal sustainable use of fish stocks and on increasing the contribution of fisheries to national income which, it argues, can best be achieved "by creating a Namibian fisheries sector, controlled and used by Namibians". In addition, policy
implementation will seek to encourage the export of value added products as a means of increasing export earnings and to improve nutrition in Namibia and the region through increasing the supply and consumption of fish.

It should be noted that the white paper also identifies a responsibility of the Government as "constantly assessing the social impact of resource exploitation, such as equity" (ibid., p49).

3.3. Sea Fisheries Act and Sea Fisheries Regulations

The promulgation of the Sea Fisheries Act in 1992 and the publication of the Sea Fisheries Regulations arising out of the Act in 1993 further reflect the development and the implementation of the fisheries policy.

The Sea Fisheries Act of 1992 repealed the South African Sea Fisheries Act (No. 58) of 1973, which applied in Namibia, and replaced it in its entirety with new legislation (Namibia 1992, 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 (Namibia 1993a), occupy 26 pages plus a further 30 pages of annexures and needs 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.

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.

Section 14(6) of the Sea Fisheries Act (1992) provides that the Minister "may have regard" when considering an application for a right of exploitation to:

"(a) whether or not the applicant is a Namibian citizen;"
(b) where the applicant is a company, whether the beneficial control of the company is vested in Namibian citizens;
(c) the beneficial ownership of any vessel which will be used by the applicant;
(d) the ability of the applicant to exercise the right of exploitation in a satisfactory manner" (Namibia 1992).

Regulation 2 of the Sea Fisheries Regulations (Namibia, 1993) adds that the Minister may have regard to

"(a) 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;
(b) regional development within Namibia;
(c) co-operation with other countries, especially those in the Southern African Development Community;
(d) the conservation and economic development of marine resources."

Attention was again specifically drawn to the above criteria in the announcement of a period during which applications for rights of exploitation could be made (Namibia 1993d). The 1992 Act and the 1993 Regulations in effect require the Minister to consider these social objectives but leaves a large measure of discretion to the Minister in granting rights.

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 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).

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(5)).

3.4. Other policy statements.

The Government was clearly wanting to use fisheries to begin to address, through implementation of the new Fisheries Policy, the enormous inequities in society
resulting from the apartheid system. This made good sense because it was politically much less fraught to offer wealth creating, redistributive opportunities that were becoming available from vastly extended fishing grounds with the declaration of an EEZ than, for example, it would be to redistribute land, which is and remains a much more challenging issue.

The emphasis given to poverty alleviation in Government policy makes it appropriate to interpret the above orientation of the fisheries policy in the context of the Government’s broader policies on alleviating poverty. It is also appropriate to do so because extreme poverty blights the lives of a significant proportion of the Namibian population and any serious commitment to development must seek out and implement practical ways of addressing this issue. Based on 1993/4 data, Namibia has one of the world’s most unequal societies with a Gini coefficient of income distribution\(^2\) of 0.7 (UNDP 1999, p8). While 5% of the population enjoy incomes of 5 times the average income, 50% of the population are forced to survive on incomes that are only 0.1 of the average. The top 5% of the population have incomes approximately 50 times greater than the half of the population on the lowest incomes (Ibid.).


The First National Development Plan (Namibia 1994) for Namibia highlighted poverty reduction as a national objective. It set a target of reducing the percentages of relatively poor households from 47% to 40% and extremely poor households from 13% to 7% by the year 2000.

The Government has more recently produced a Poverty Reduction Strategy for Namibia (NPC, 1998), developed to provide "a common framework, shared by ministries and other stakeholders, within which efforts at poverty reduction can proceed" (Ibid., p3). The strategy document readily acknowledges the reality and cites the 1993/4 household survey (NPC 1996) which shows that "7 000 Namibians were estimated to spend as much as the poorest 800 000 combined" (Ibid.). The document proposes an institutional framework for monitoring the implementation of the poverty reduction policy objectives of government and proposes a National Advisory Committee on Poverty Reduction (Ibid.).

\(^2\) This is a frequency distribution measure where perfect equality equals zero and perfect inequality equals 1.
Government policy on investment, and particularly on foreign direct investment, needs to be borne in mind.

The Namibian Government has encouraged investment in Namibia and has particularly attempted 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% for non-mining companies and non-resident shareholder tax to 10%.

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 1990b).

Investment has also been encouraged through the establishment of the Namibian Stock Exchange in 1992.

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, in general, a flood of inward investment, although there was very considerable investment in the fishing industry during the last decade.
3.5. Conclusion – a set of first principles

From the fisheries policy and other Government policy positions that have a bearing on the fisheries policy, it is possible to derive a set of first principles for the distribution of rights, quotas and other aspects of the management system:

1. Namibia’s fish stocks should be allowed to recover and should then be fished at a level that approximates their maximum levels of productivity.

2. The principle beneficiaries of the use of Namibia’s fisheries resources should be Namibians. In particular, the policy identifies those “disadvantaged” by the apartheid system before independence as recipients of these benefits.

3. Special consideration needs to be given to alleviation of poverty and to the elimination of the extremes of poverty.

4. The country should provide an environment conducive to investment and should remain attractive to appropriate foreign investment.
4. The question of resource rents

Resource rent in economics is a concept that relates the scarcity of a natural resource to the demand for it. It may be defined as revenue in excess of costs, when costs include a return to capital and labour, to risk and to entrepreneurship. In other words, it refers to what is in excess of 'normal' profits. Normal profits are not some fixed rate of profit but are what might be earned by any other enterprise in the economy.

A feature of all natural resources for which the demand exceeds the supply is that they produce a rent. In the manufacturing sector, if a company produces a product, markets it and manages to sell at a price that offers a profit to the enterprise that is higher than what might be considered a normal profit, then the enterprise will seek to manufacture more of the same product. It will continue to do so until it has satisfied market demand, when revenues just cover all costs, including a return to capital and entrepreneurship. Other enterprises may compete to secure part of that market. The quantity of the product produced will increase until demand is satisfied.

The volume of production for a natural renewable resource does not work like this once the capacity of that natural resource to supply has been reached. If there is not a sufficient supply of the natural resource to meet the demand for it, enterprises cannot respond to price increases by producing more. Once the fishery has been fished down to a point where the optimum productive level of biomass has been reached, further increases in catch will result in a reduction of the biomass below the level of optimum productivity and ultimately to smaller catches at greater cost. (See Appendix One for a more detailed discussion of the bioeconomics of fisheries.)

For a renewable natural resource, like fisheries, the limit of what can be produced is determined by how much the resource can produce. For example, the limit of how much hake is produced is determined by the optimal productivity of the hake stock. When prices rise, the industry cannot respond by increasing the quantity produced if the biological limit of the productivity of the stock has been reached. This fact results in an increase in price as people compete to secure a share of the limited production for themselves. Profits in excess of what could be considered normal profits are produced. These excess profits are what we refer to as resource rents.

Resource rents in fisheries 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 net revenue for the New England
groundfish could be about 65% of gross revenue, indicating very high levels of resource rent. (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, a rent of about 42% of the value of the fish (Dupont 1990). In a highly productive resource system like that of Namibia, one would expect high levels of resource rent in the commercially more valuable fisheries.

Resource rent relating to a particular fish stock will vary according to physical and biological parameters; e.g. the degree to which a particular stock is dispersed or aggregated will determine, in part, how costly it is to catch and this may change over time according to marine environmental conditions. Rent may also vary according to market conditions. A shortfall in supply is likely to result in price increases and higher rents being generated; oversupply in relation to demand will reduce prices and may eliminate rent associated with a particular stock. Rent is often only potentially available in a fisheries, as it may very easily be dissipated on inappropriate competition to harvest the resource. Worldwide the "race for fish" has resulted in huge overcapacity in the fishing fleet which also wastes resource rent.

If the resource is publicly owned, which is usually the case, these resource rents belong to the country as a whole and should be allocated by Government, acting on behalf of the people, with the objective of ensuring the greatest benefit to society as a whole. Fishing companies should expect to earn healthy normal profits in the long term but, in turn, need to acknowledge the collection of the rent by the state as a payment for reaping the benefit of the productivity of publicly owned fisheries resources.

4.1. Who owns Namibia’s fish?

Article 100 of the Constitution states that

"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).

In this article the Namibian state claims ownership, inter alia, of the natural resources of the territorial sea and the EEZ, which includes fish stocks. Read

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1 Namibia may claim the "sovereign rights for the purpose of exploring and exploiting, conserving and managing" its marine fish stocks (UNCLOS 1982, Art. 56). It can thus claim the benefit from fish caught in its territorial sea and EEZ, which is sufficient for the purposes of this study. It is disputable whether any state can claim ownership of marine fish stocks, per se, in terms of international law.
with Article 95 of the Constitution quoted above, which says these resources are to be "utilised on a sustainable basis for the benefit of Namibians, both present and future", the benefit gained from harvesting of marine fish belongs to the state acting on behalf of the people. The Namibian people should be the beneficiaries of these resources and it is incumbent of the state to ensure that they are utilised for the general good of Namibian society.

4.2. Collecting resource rent: covering the costs of management

The cost of the management by a fisheries authority should be considered part of the costs of fishing.

Relative to the management performance of many other fisheries authorities, the Namibian Government has done better than most other countries, including many 'developed' states, inasmuch as Namibia has collected sufficient revenue from fisheries to cover the costs, or most of the costs, of management of the resource. Namibia does have a very rich resource, however, particularly when considered in relation to the size of its population, so there is every reason to expect full cost recovery and more.

![Graph showing decline in quota, bycatch and licence fees collected by Government from the fishing industry between 1994-1998 and the rise in costs of managing the industry](image)

**Figure 1:** Decline in quota, bycatch and licence fees collected by Government from the fishing industry between 1994-1998 and the rise in costs of managing the industry

**Source:** MFMR 1998.

Total revenue (in current values) from quota fees, bycatch fees and licence fees declined from N$118.24m in 1994 to N$61.49m in 1996 but rose again to N$79.05m in 1998. (See Appendix two for a summary of the management system
and of the fees and levies charged by Government. Revenue as a percentage of landed value fell from 14.4% to 5.7% (Figure 1). The fall in revenue in the middle part of the decade was in part the result of a decline in catches in the middle of the decade. The general trend of decline in revenue is largely the result of more companies claiming the full levy rebates as a result of the Namibianisation policy. For most of the decade quota levies remained static and have neither been adjusted for inflation nor were they increased in proportion to the very large increases in value resulting from changes in exchange rates applying to the main markets into which the fish is sold and price increases in those markets.

The cost of managing fisheries resources is largely financed directly through the annual government budget allocation for the MFMR. This is not a comprehensive figure as part of the long-term management costs are currently financed through donor funded projects. If we estimate that half of the non-capital donor funding as being part of the long-term management costs, then we can see that costs of management in 1998 of N$92.96m exceeded the total revenue from quota fees, bycatch fees and licence fees of N$70.06m. If the donor-funded projects are disregarded then the revenue just exceeds the costs represented by the annual budget allocation.

In addition, some of the research is directly funded through the Sea Fisheries Research Fund, the income for which comes directly from the levies on catch paid into the fund by the fishing companies. There is thus some cost recovery for research financed by the Fund.

The question as to whether management costs are 'reasonable' often arises in fisheries where an effort is made to achieve cost recovery (National Research Council 1999). A rough measure used is: costs as a percentage of the landed value of fish. In the case of Namibia this figure has been between 5% - 7% of the landed value of fish caught (1995-1998). This compares with costs of 5% in the New Zealand fisheries (Ibid.). While this figure may be considered to be reasonable, it does not include the cost of onboard observers, which is borne directly by the industry. It also does not take account of the fact that the Namibian fisheries are relatively easy to control due to there being only two ports and a relatively small number of fishing vessels. These costs need to be kept under review, as should be the case with any other costs, as they diminish the rent that might otherwise be available from the industry for development purposes.

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4 This is an arbitrary proportion but attempts to recognise that some of this expenditure is necessary because of the lack of training of Namibian personnel arising out of past discriminatory practices, but that part of it represents the normal training programmes and other expenditure that one would expect in any fisheries ministry.
4.3. Resource Rents and the Namibian fishing industry

It is very difficult to determine the economically optimal longterm level of rent that could be generated by a fishery as the data required is necessarily extensive. It also needs to take account of the variability of the resource and changes in market conditions. Any calculations of resource rents generated in the Namibian fishing industry are necessarily rough estimates as the extent of the detailed data required is not at present available.

Calculations based on Namibia’s National Accounts have shown that, while more than 50% of available rent was collected by Government just after independence, this figure had dropped to 26% by 1997 and to only 11% by 1998 (Lange forthcoming 2001). It should be noted that a very generous 30% return on capital was provided for in the calculations and that they are based on rents realised. They do not take into account potential rents not at present being realised because of overcapacity or other inefficiencies. According to these figures, rent (or profits in excess of normal profits) valued at some N$723 million in 1996 was accruing to the private sector from the hake, horse mackerel and pelagic fisheries (Ibid.)

Major factors determining the resource rents available in a fishery are the market prices for the species and the environmental conditions which influence how costly it is to harvest the species. The efficiency with which the industry is operating, particularly in relation to over-capacity, has a direct bearing on the extent to which additional resource rent, which is at present being wasted, could be generated.

It is useful to more closely examine supporting evidence relating to these fisheries.

4.3.1. Hake

An estimate based of the informal market for quota in 1996 also showed that for the hake fishery, which accounts for about half of the value of Namibia’s fish production, the potential resource rent, which was not collected by Government, could have been as much as about N$260million (Manning 1998). This was based on the informal market of hake quota, which for frozen hake, was N$850 per tonne in 1996 and N$350 per tonne for quota for wet fish vessels. It included an estimate of rent being wasted on overcapacity and on rent spent on financing onshore employment. Anecdotal evidence from within the industry suggests that at the beginning of 2000, the price of hake freezer quota had risen to about N$2200 per tonne, reflecting the increase in the rent associated with this stock. These figures do need to be treated with some caution, however, as the market for the hake quota is not an open market, because the existence of excess
capacity for some companies means that there is probably a tendency to use only short term operating costs, and the extent to which any overcapacity exists (absorbing potential resource rent) is difficult to estimate.

Tracking what has happened to market prices provides a benchmark against which increases or decreases of resource rents may be estimated. Figure 2 was generated from data published by the MFMR in its 1998 "Report of Activities and State of the Fisheries Sector" (MFMR 1998) and from data obtained from the Globefish European Fish Price Reports (FAO Globefish). The Globefish data is for ex-coldstore prices of headed and gutted Namibian hake on the Spanish market. The figures are for both merluccius capensis (Cape hake) and merluccius paradoxus (deep water hake), Namibia's two commercial hake species. All of Namibia's hake sold on the Spanish market is classified by Globefish as Merluccius Capensis for statistical purposes. Spain is Namibia's principal market for hake. Annual average prices of the three main size categories were used. The conversion factor of 1.46 (Namibia 1993a, Annexure Q.) was used to convert the price of headed and gutted hake to the whole fish equivalent price.

Figure 2: Prices of Namibian hake.

5 Except for 2000 which reflects average prices for January to April 2000 inclusive.
Examining the period for which there is comparative data available (1994-1998 inclusive), the landed value of hake in Namibia rose by 51%, according to data from the MFMR, while the ex-coldstore value of headed and gutted hake in Spain rose by 96% during this period. This calls for closer examination. As the Globefish prices have not been adjusted to exclude freight costs, some difference in the prices should be expected. At a time in the early 1990s, when a greater proportion of the rent was being recovered by Government, the Spanish market price was much closer to the landed value recorded in the data collected by the Namibian Government. It would appear that the full picture of what is happening to market prices is not reflected in the survey data received by the MFMR and that a significant proportion of the resource rent is not accruing in Namibia. Making allowance for transport and cold storage costs, significant resource rent is accruing outside of Namibia, possibly as a result of transfer pricing.

A further feature of market prices for headed and gutted Namibian hake in Spain is that there is a very large difference in price per kilogram between small and large fish. The largest size fish may sell for more than 100% more per kg than will the smallest size fish (FAO Globefish, 1994-2000). The average price for the three main broad size ranges used by Globefish have been used in this study. The size make up of the catch has a substantial influence on what revenues are being earned by the Namibian industry.

Sampling of the commercial catch has been undertaken since 1997. The data available for the three years 1997-1999 gives the size and weight makeup of the catch. This reveals that the size makeup, and therefore the per kilogram value, of the catch has improved over this period (see Appendix Three).

4.3.1.1. A rise or reduction in costs

The gross registered tonnage (GRT) of the fleet committed to targeting hake rose 32% between 1994 and 1996, resulting in some overcapacity developing in the fleet. The reduction in GRT after 1996, coupled with improved biomass, and consequently a larger hake TAC, brought about an improvement in the catch per unit of effort, using gross registered tonnage as a rough proxy. This would suggest that a major cost component, the unit cost of harvesting, at first rose, because the size of the fleet rose at a time when the TAC remained static and the biomass was declining. Unit costs were then reduced after 1996 with the size of the fleet being reduced. They have been further reduced with a rise in the TAC. This is depicted graphically in Figure 3.
Figure 3: Total GRT of fleet targeting hake and number of tonnes caught per GRT.

Source: Data on fleet: Register of Fishing Vessels; MFMR-Register

The question remains as to whether there is still significant overcapacity in the hake fleet. From scrutiny of the Register of Fishing Vessels held at the MFMR, we know that NovaNam’s two freezer trawlers, which together have a GRT of 3164 GRT, harvested the whole of NovaNam’s freezer quota of 16304 tonnes. Based on this, the GRT of the fleet that would be needed to catch the whole freezer quota of 85 551 tonnes in 1999 would be 16 541GRT. The GRT for the hake freezer fleet for 1999 was 24809 GRT. If all the vessels in the fleet operated as efficiently as NovaNam’s, then 8269 GRT too much of fleet capacity was deployed, that is, about 50% of what it would be needed. Gross registered tonnage, however, is only a rough measure of the fleet’s harvesting capacity and many other factors contribute towards fishing effort. If, as is possible, the whole fleet was kept busy throughout the year harvesting the hake TAC for freezer vessels, then the vessels that make up the remainder of the freezer fleet are not nearly as efficient as those used by NovaNam!

Another major cost component in the hake sub-sector has been the costs of the fish processing factories. In the early 1990s when stocks were improving, decisions were made by individual companies to build or improve white fish processing facilities. The MFMR had made it clear that companies that invested in onshore processing capacity would be favoured in the allocation of quotas.
In such circumstances, each individual company can make a rational decision to build a plant capable of a particular throughput, and to decide on a throughput higher than the quota they were then receiving. They may do so on the basis that the TAC was increasing and that, with extra plant capacity, they would have a convincing case to make to the MFMR for an increase in quota. While these decisions were rational for the individual company, they were not rational for the industry as a whole, as processing capacity developed way ahead of the tonnage available for processing. This was coupled with the declines in catch that can occur as a result of ecosystem variability.

Thus there also developed excess capacity in processing. There is at present capacity onshore to process about 160 000 tonnes of white fish per annum (Blatt, 1998) while only 85 000 tonnes of hake was allocated for onshore processing in 1998 and 59 000 tonnes in 1997 a (MFMR database). These facilities are utilised for the processing of other minor commercial species.

The rise in the prices for hake and the fall in the unit costs of harvesting offer additional support to the argument that there are substantial rents being earned in the hake fishery.

4.3.2. Horse mackerel

A similar argument can be constructed for the horse mackerel midwater trawl fishery. Values have risen considerably since the mid-1990s (Figure 4), from N$790 per tonne in 1994 to N$1 368 in 1998, a rise of 136% in Namibian dollar terms at current values (MFMR 1998). Despite this, during this period the total revenue collected by Government through the quota fees and the Sea Fisheries Fund levies for the horse mackerel fishery decreased from N$27.9 million in 1994 to N$16.5 million in 1998, after reaching a low point of N$13 million in 1996.

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a The argument set out in relation to the optimal size of a fleet operating in conditions of variability (Appendix One, see Table 2) can be applied to processing capacity as well.
The horse mackerel mid-water trawl catch is largely frozen at sea so most of the cost component relates to the fleet. There was a sharp decrease of about 45% in the catch per GRT between 1994 and 1995 followed by a more gradual decline between 1995 and 1997 of some 14%. This is probably explained by the deterioration in marine conditions during this period. The catch per GRT deployed increased by 32% between 1997 and 1998 as there was an improvement in the marine environment and reduction in fleet size. It is difficult to comment on costs from this evidence, particularly as most of the vessels in this fishery are foreign owned and all are foreign registered. Decisions to use a vessel in the Namibian fishery can also very easily have as much to do with the lack of adequate fishing opportunities elsewhere, in conditions where there exists world-wide over capacity in vessels as it might have to do with the profitability in the Namibian fishery.
Thus the GRT of fleet capacity needs to be considered with some caution in the horse mackerel fishery. The catch per GRT of fleet capacity fell in the mid-1990s but rose again during 1998 and 1999 is still about a third lower than what it was in the early 1990s.

However, the 136% increase in the Namibian dollar value per tonne landed points to possible significant rents existing in this fishery. Lange found that rent not being collected by Government to the value of N$ 79 million was being generated in the horse mackerel fishery (Lange, forthcoming 2001).

4.3.3. Pilchard

The heyday of the pelagic fishery, principally targeting pilchard, has long since passed. During the last decade, pilchard has only made up between 4% and 45% of the pelagic catch, except for 1994 when pilchard made up 65% of the pelagic catch. Juvenile horse mackerel and anchovy make up the remainder of the catch. It is clear that this fishery has lived on in the hope that the pilchard biomass will rebuild again to a level that approximates the biomass consistent with the maximum sustainable level of harvesting, based on the harvesting history of the 1950s and 1960s.

After an initial period of restraint in the 1950s, when the annual catch was limited to about 250 000 tonnes, the pilchard harvest rose sharply during the 1960s to reach a declared catch of 1.4 million tonnes by 1968. The catch collapsed dramatically in 1970 and by 1980 it was only 10 837 tonnes, less than 1% of the declared catch in 1968. Despite periods of growth, this stock has never recovered to anywhere near its former size. Various explanations might be given for this. One theory is that the biomass has fallen below a critical minimum size that would allow substantial recovery, that is, that depensation is associated with this stock. Another view is that there has been an ecosystem change that has brought conditions not conducive to the growth of the pilchard stock, that prevents the stock from recovering.

Whatever the reason for the failure of the stock to recover, this fishery has been in crisis for the last two decades. The catch over this period has bumped along the bottom, each year's catch dependent largely on the recruitment to the stock of that year's recruitment cohort.

A prima facie case can be made that there is considerable excess capacity in both the fleet and in processing capacity. Scrutiny of the vessels working in the Namibian pilchard fishery in 1974/5 detailed in the Fishing Industry Handbook 1974/75 (Engelhardt, H., 1994), reveals there were 77 vessels operating in the
pelagic fishery that year, with an aggregate gross registered tonnage of 9330 GRT. This fleet harvested a total pelagic catch of 833,611 tonnes (89 tonnes per GRT of fleet capacity), of which 554,714 tonnes were pilchard and 252,840 tonnes were anchovy (ibid., p 27). In contrast, 35 vessels with an aggregate of 13,689 GRT, harvested 68,562 tonnes of pilchard and 5,193 of anchovy and 50,000 juvenile horse mackerel in 1998, i.e., about 9 tonnes per GRT of fleet capacity. Pilchards tend to continue to aggregate quite densely when the stock is fished down, so that there is not a marked reduction in catch per unit of effort commensurate with the smaller size stock. While more effort is used when the stock is small in searching for shoals, it is also the case that the technology of locating and catching has steadily improved in recent decades. Even making a generous allowance for the small size of stocks, these figures suggest that there must be considerable excess capacity in the pelagic fleet. There also exists a sizeable overcapacity in the processing sector. There are 5 licensed canning factories and six fishmeal plants licensed with the MFMR. Most of this capacity has been idle since independence.

It is particularly important to recognise with this fishery that the economic optimum in capacity is probably considerably lower than the capacity to harvest in a good year (see Appendix One), because of the degree of variability in the size of the pilchard biomass. The implication of all of the above is that the system of granting access needs to be adjusted so as to create a set of incentives that will encourage fishing companies to adjust their capacity to the productivity of the resource to supply. This is complicated by the fact that investment in the fishing industry is generally for a period much longer than it takes for adjustments in the fortunes of a short-lived pelagic fish stock. The pelagic fleet now has an average age of about 35 years. At least some of the resource rent has for years been absorbed in maintaining capacity well in excess of the needs of the fishery in the hope that the resource will suddenly revive to something closer to what it was in the 1960s.

It would seem appropriate to acknowledge that the change that has taken place in the balance between pelagic populations is probably long-term and that mechanisms should be developed that would encourage an adjustment of capacity to this reality.

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7 On average the vessels were considerably smaller than those that make up the present pelagic fleet although a significant number of the vessels are still part of the fleet.

8 TAC allocation to the pelagic fleet has been used.
4.4. Uncollected Rent – a subsidy to industry

What becomes clear is that there exists considerable uncollected resource rent in the fishing industry and more that is at present being dissipated on financing overcapacity. Resource rent generated but not collected by Government is accruing to the fishing industry. The question then arises as to exactly who it is that is benefiting from these excess profits.

It could be argued that allowing resource rent to remain in the industry functions as a subsidy, although not as a very precisely targeted subsidy, and one for which there is a lack of real accountability.

The Namibian Government has clearly understood that there are rents available in the Namibian fishing industry and have expected newcomer companies that have entered the industry without assets to use this resource rent to establish themselves in the industry. The Government has regarded resource rent as a subsidy available to companies in the industry although it has not explicitly described it in these terms. This became clear from a speech delivered by the then Minister of Fisheries, Helmut Angula, to a conference of newcomer companies in 1992. Reviewing the results of a questionnaire sent out to existing rights holders he warned the “newcomer” 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, sic).

The Minister clearly did not regard rights of exploitation and quotas as handouts for which the newcomer companies were not answerable. While accountability is evidently expected from companies in general terms, the system functions in such a way that this form of subsidy is not 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.

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9 This term has come into common usage in Namibia to describe new companies entering the fishing industry after independence as part of the Government’s affirmative action programme for the industry and will be used in this report.

10 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 argument is presented in the conclusion 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.

The question of resource rents in the Namibian fishing industry clearly needs to be given more attention in order to be more exact in the estimation of potential and actual resource rents. Circumstantial evidence supports the calculations derived from the National Accounts that substantial resource rents are being generated in the fishing industry but are not being collected by Government.

4.5. Rent-seeking behaviour

Resource-rich economies tend to be subjected to more extreme rent-seeking behaviour than resource poor economies (Lane and Tornell, 1995). It can happen that entrepreneurship becomes synonymous with a national orientation towards grabbing the rents generated by the country's natural resource endowment.

The term "rent-seeking" refers to activities that seek to capture the resource rent associated with a natural resource. A essential characteristic of what Jagdish Bhagwati (1982) analysed a set of "directly unproductive, profit-seeking activities" is that they "represent ways of making a profit (i.e., income) by undertaking activities which are directly unproductive" (Bhagwati 1982, p989). Rent-seeking may be perfectly legal, such as lobbying, or entertaining decision makers in order to influence their decisions or it may be illegal, taking forms such as bribery. Competition to secure the resource rent, whether legal or illegal, can ultimately result in the complete waste of the resource rent and its loss to the public good.

The waste of resource rent in the Namibian fisheries sector needs to be more carefully examined. We have established a system of management that places the Minister and senior civil servants in a position where they may be subjected to intense lobbying or perhaps to other inducements. Expenditure on inappropriate competition for access to a renewable resource wastes valuable resource rent.

Much of the involvement in the fishing industry by new companies has been by way of rent seeking rather than through any practical involvement in the industry. Most newcomer companies have become involved in the fisheries sector by taking advantage of the opportunity to fish rather than by developing a technical capacity to undertake fishing activities and themselves manage the industry that they have been involved in.

This is not the fault of the newcomer companies. Lack of an adequate technical and managerial support framework and a lack of access to adequate finance, has
resulted in their having to turn to the major companies in the industry in order to survive.

4.6. Who gets the resource rent

The means that the Namibian Government chose to achieve the policy objective of directing greater benefit from fisheries towards Namibians has been through the granting of rights of exploitation and the allocation of quotas to Namibian companies.

The thinking behind this process is essentially that the rent generated in the fisheries sector would flow to the recipients of rights and quotas. 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.

Although not stated in these terms, the government saw the distribution of quotas in part as distributing a right that has a considerable value that can be transformed into revenue. In other words there was an acknowledged subsidy element in the allocation of quota.

The clear intention is expressed in this regulation to address the inequalities that developed in Namibia over many decades. In reality, those “who have been socially, economically or educationally disadvantaged” most seriously by past discrimination are the poor of our country.

It is hardly necessary to state explicitly that the poorest of Namibia’s population were excluded by the process of applications for rights of exploitation and quotas, 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 the portion of the benefit from the resource that rightly belongs to the country as a whole 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, from a policy perspective, the allocation does not particularly benefit those who should be benefiting from the resource.
5. Ownership and control of the Namibian fishing industry.

The question arises as to what is happening to resource rents, which are not collected by Government, but which are being generated in the Namibian fishing industry. Uncollected resource rent, in the sub-sectors in which it accrues, is accumulating as additional profits.

Governments are at liberty to make decisions regarding the use of resource rents within the confines of doing so in the interests of society as a whole. The objective of the Namibian Government of generating greater benefits for Namibians from the country's fisheries is examined in this section. The principal vehicle which the Government has used to achieve this objective is the granting of rights of exploitation and the allocation of quotas to particular companies that meet the affirmative action criteria contained in the Sea Fisheries Act and Regulations.

The questions that arise from this approach are (a) whether the underlying assumption is correct that the resource rent will accrue to the recipient companies in proportion to the ownership of the companies, (b) whether the recipients of the quotas are the most appropriate recipients of this wealth in the form of rent and (c) whether there are more appropriate ways of using the resource rent in the interests of Namibia's development. It is important, therefore, to examine the ownership structure and relate to it the quotas granted.

The purpose of this examination is to illustrate that the way the industry has evolved over the last decade, means that very substantial profits, in excess of normal profits, must be accruing to larger, established enterprises, both foreign and national, which have adjusted to the rules in ways in which they fulfil the letter of the criteria established by Government to implement policy, but which results in largely defeating the stated purpose of Government policy as articulated in section 3 above. It is to argue that a strong prima facie case can be made that substantial financial resources, which should be collected by the state, acting on behalf of the people as a whole, are not being collected by Government. A valuable opportunity for development finance is being forfeited.

5.1. The nature of Namibianisation: how is the rent distributed?

Prior to Namibia's independence, the offshore fisheries were dominated by foreign fleets, particularly those of Spain, targeting hake, the USSR, targeting horse mackerel and the Japanese targeting the red crab stocks. Tuna was also
targeted by foreign fleets in what is now Namibia’s EEZ. These fleets did not operate from a Namibian base.

The Namibian based fisheries sector was dominated by a tightly knit cartel of South African companies whose main interest was primarily the pelagic fishery and the rock lobster fishery (Moorsom 1984). From the early 1980’s the pelagic industry has been characterised by poor catches from a stock that collapsed in the 1970s and has never recovered. The rock lobster fishery had also been severely depleted prior to independence, but the slow process of rebuilding this stock has been under way since independence and has resulted in a growing biomass and gradually improving harvests.

There were two principal independent Namibian companies, Consortium and Freddie Visserye (Pty) Ltd. Consortium was, and still is, owned largely by the wealthy Namibian List family and is controlled by them. This company sold its frozen white fish production through Irvin and Johnson (Ibid.), with which it now operates a joint venture company, Hangana Seafood (Pty) Ltd, through Kusheb Fish Products (see Figure 11 below). Freddie Visserye was owned by a small operator who gradually built up the fishing company and marketed his production independently (Ibid.).

In 1987 fishing companies were granted rights for a seven year period. These rights came to an end in December 1993 and the MFMR, then ready with a new fisheries policy, the 1992 Sea Fisheries Act and the associated 1993 Regulations, granted a new set of rights to successful applicants. This was the opportunity to implement the new fisheries policy.

Following the granting of new rights of exploitation in 1993, which took effect at the beginning of 1994, 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 argued 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 was not nearly as dramatic in reality 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. This is by no means necessarily the case.
On each occasion that the MFMR have invited companies to apply for rights of exploitation, there has been an enthusiastic response. In 1993, when the MFMR invited companies to apply for rights of exploitation, the Ministry received 565 applications for rights from 316 applicants and, on this occasion, granted 159 rights to 120 companies and individuals (MFMR 1993b). On occasions since then, when the Ministry invited interested parties to apply for rights in the orange roughy / alfonsino fishery and when the rights granted in 1993 for the four year period came to an end in 1997, the response has been substantial. The consistent perception has been that such rights have value beyond merely an opportunity to start a business.

Although not recognised in the terminology of economics, it is widely acknowledged that there is a rent associated with the allocation of rights and quotas. They are seen as valuable, their value varying from species to species. The very fact that quota is leased out by quota holders is an acknowledgement by both lessor and lessee that this value exists. Indeed the Ministry itself acknowledges that the quotas are valuable, i.e. that they have rent associated with them. Allowing this value to remain in the fishery amounts to offering a subsidy to the recipients of rights and quotas, theoretically in proportion to the rights that they have received.

5.1.1. What is the nature of the management system?

The MFMR argues that Namibia has in place an individual quota system for most of the commercial species and effort limitation is used to restrict the harvesting in the remaining fisheries. An essential feature of Namibia's fisheries management system is that rights are not transferable, except with the permission of the Minister (Namibia 1992, s14(10)), or divisible, and that they are only for a limited period. The thinking behind making rights non-transferable is that, if they were made transferable and divisible, small companies that are newcomers to the industry would be squeezed out of the industry and the established companies with financial and industrial muscle would ultimately take over all the rights.

The Ministry has consistently taken a position of opposing the notion that the quotas be made fully transferable and tradable, and that they should be granted in perpetuity. If such a system were introduced, transfers of rights would then take place as a result of market transactions.

What has in fact happened is that the Namibian quota system has taken on many of the attributes of an individual transferable quota system without it being acknowledged that this is the case.

In an individual transferable quota (ITQ) system, quotas defined in terms of a percentage share of the total allowable catch, are granted in perpetuity, can be
traded (either leased or sold permanently) and can be inherited. They are also divisible, so that part of a quota share can be bought or sold. It is now widely acknowledged in the fishing industry internationally that such systems, where it is possible to implement them, lead to greater efficiency in the use of fisheries inputs. The incentive to impress those making decisions about the allocation of quota is removed, once the quotas have been allocated. The decision was made by the Namibian Government not to implement an ITQ system in Namibia as it was believed, with good reason, that the smaller newcomer companies would too easily be taken over and thus eliminated from participation in the fisheries sector.

Major operating companies in the industry have been faced with quotas that do not fit their harvesting capacity or the throughput of their factories. In the interests of efficiency they have sought to accumulate the quota need to achieve maximum utilisation of the capacity that they have. In a system that permitted the transfer of rights or quotas, they would simply seek to lease quota in the short run or purchase it outright in order to utilise their capacity efficiently. These would then simply be added to the quotas and rights already in the possession of the company.

Because quotas are not officially transferable and tradable, the major operating companies have had to find other means of achieving the same objectives while maintaining the diversified appearance of ownership of the industry. This has resulted in complex groupings of companies.

In practice a form of ITQs has evolved in the Namibian fisheries sector without it being acknowledged or planned and, therefore, the management system lacks transparency and the institutions that ought to be put in place in the context an ITQ system operating in Namibia.

Let us examine the basis for making this claim:

5.1.1.1. How permanent are the rights?

Theoretically, the Minister could decide not renew the rights at the end of the period for which they have been granted or could withdraw them at any time if he or she considers the continued participation of the rights holder to be no longer in the interest of the industry or of the resource (Namibia 1992, s14(8)(b)). These powers have been exercised. However, companies that have been granted rights and have then made investments in the industry do so in the belief that the rights will be renewed provided that they meet the requirements of the fisheries policy. They have adjusted shareholdings in such a way that it allows the Government to proclaim that the fisheries policy is a success. They have ensured that a company granted a quota can claim to have a share in a vessel, even though this does not mean any sort of autonomy or measure of control over the vessel. Not
to do so would be to invite non-renewal of rights when they are next considered.
In any case, the Government is unlikely simply to deny rights to companies to whom they have granted rights during a previous allocation if they have become a functional, operational part of the industry as a result of their investments in vessels and shore-based facilities. To do so would soon lead to a collapse of the industry, as it would undermine confidence and result in a halt to long-term investment.

This is certainly the perception of the major players in the industry. A trader in the Namibian fishing industry remarked recently that "Anybody who has not made it by now will be out of the industry. But those who have made it will be there for ever" (Fishing News International 2000).

There is thus a high degree of confidence that rights will be renewed although this is not guaranteed as part of a right.

5.1.1.2. Trading of quotas:
Trading of quotas takes place, both in the form of leasing quotas out for the season for which it has been allocated and in the permanent transfer of quotas:

(a) The leasing of quotas is generally couched in the terminology of chartering a vessel to catch the quota with part of the deal involving the processing and the marketing of the quota. Typically, an amount per tonne is agreed between the parties and the quota holder signs over the use of the quota for the year. Responsibility for the quota fees is taken on by the lessee taking over the quota, and all arrangements regarding the catching, processing and marketing of the quota are transferred to the lessee. There is no difference between this form of "chartering" and officially leasing out a quota.

(b) The permanent selling of a quota takes place under the cover of buying a company, or a controlling interest in a company, which has been granted a right of exploitation and a quota or through the establishment of a joint venture. If a company has no assets or very few assets, other than the right of exploitation and the accompanying quota, then the sale of the company is no different to selling the quota. This has happened in a number of instances. In many cases some shares are retained by the original shareholders as a form of insurance: if the Ministry withdraws the quota, then it will damage the last remaining interest that the original shareholders have in the newcomer company.

Joint ventures between newcomer companies and major enterprises are often established. The big operational fishing company generally supplies the vessel, processing, marketing and management while the newcomer
company delivers the quota. In order to qualify for renewal of the right at the end of the period for which it had been granted, newcomers are expected to invest in a vessel or processing facility. This frequently means that a financing deal is done with the major company providing the mortgage. The mortgage then has conditions attached to it that tie the small company into the joint venture arrangement. The major company takes operational control of the joint venture enterprise, while the newcomer company functions as a conduit for the quota or right.

It may also be that a right is sold when a vessel is bought which has a right attached to it. An example of this can be seen in the purchase of the monk sole concession with the trawler, MFV Esra\(^{11}\), by Gendor for N$9.1m. In the Company's 1998 annual report, under the heading "Acquisition of a Monk Concession" it is clear that the principal reason for buying the vessel was securing the right to harvest monk and sole (Gendor 1998). The vessel was withdrawn from the fishery and the right was transferred to another vessel the MFV Whiby. In a Circular to Shareholders (Gendor 1999) dated 30 August 1999, it is explicitly acknowledged that the Whitby is "harvesting monk, hake and sole on a monk concession purchased in November 1998 for N$9.1 million" (ibid., p11). No mention is even made of the purchase of a vessel as part of the price.

The purchase of rights and of quotas in various ways has become common within the fishing industry and is not by any means unique to Gendor. It is also an entirely expected development where the industry is vertically integrated, highly commercialised and where there are economies of scale in international marketing and in processing for export.

5.2. Response of companies to incentives to Namibianise

Government established a set of incentives to encourage the Namibianisation of the industry. These included: (a) "consideration" of whether or not the applicant is a Namibian citizen or a company under the "beneficial control" of Namibians (see 3.3 above). The message was clear that those companies that were Namibianised would be more favourably considered. This did not mean that those companies that were not 51% or more Namibian owned were penalised. (b) Those companies judged to have made a major contribution to the development of Namibia were favourably considered. Pescanova, now NovaNam, was 100% Spanish owned but received the largest hake quota, on the grounds that it made a 'significant' investment in onshore processing facilities and

\(^{11}\) The "Esra" was built in 1984 and is beyond what would normally be considered its useful lifespan.
so contributed in a substantial way to the provision of onshore jobs. (c) The Namibianisation process was encouraged with a financial incentive in the form of rebates on the quota levy. Appendix Two details the levy rebates applicable in various fisheries.

Closer examination of the process of consolidation of the industry around a handful of large companies and their absorption of many of the newcomer companies in one way or the other, offers an insight into the nature of developments within the industry.

5.2.1. Pescanova becomes NovaNam

NovaNam was registered as a company in 1995. Previously, Pescanova Fishing Industries of Namibia was a wholly owned subsidiary of Pescanova SA, the Spanish multinational fishing company. There was no apparent pressure on Pescanova SA to "Namibianise" the company. It enjoyed the largest quota in the hake fishery, one that was two and a half times the size of the next largest quota in the hake fishery (Stuttaford 1996, p77). However, by "Namibianising" its interest through the establishment of NovaNam, it immediately saved itself N$200 per tonne of hake on the basis that its quota was being caught by vessels that are more than 51% Namibian owned. On the annual quota of 25 637 tonnes of hake at the time (between 1994-1996), this meant an immediate saving of N$5.167 million in quota levy payments (see schedule in Appendix Two) at the expense of Government revenue.

Namibianising the company has been achieved through a judicious mix of ordinary and preference shares. Pescanova SA has 49% of the shares and 2% are in the name of the NovaNam Staff Trust, both lots being ordinary shares. The remaining 49% are held by NIB Nominees, with the beneficiaries being "Namibian institutions and individuals". These shares are preference shares for with voting rights the same as those of ordinary shares\(^\text{12}\) but with dividends being calculated differently. Neither the identity of the institutions nor of the individuals has been made known.

Pescanova SA have achieved the change to the structure of their shareholding in such a way that they and the Namibian Government can say that NovaNam is 51% Namibian owned, without it being publicly known who the new beneficial shareholders are, whether there were any management agreements involved in the sale of shares to the "Namibian institutions and individuals" or whether the control by Pescanova is maintained through the shares held in the name of the

\(^{12}\) Voting rights for the holders of preference shares is normally restricted.
NovaNam Staff Trust. Whatever the mechanism is that Pescanova SA used, the same management team now run NovaNam as ran Pescanova's interests in Namibia before the change in shareholding was arranged. It appears that Pescanova SA remains firmly in control of the Namibianised company.

![Diagram of NovaNam group of companies and relationships with newcomer companies.]

**Figure 6:** Structure of the NovaNam group of companies and relationships with newcomer companies.

**Note:** hw = hake wet quota; hf = hake freezer quota; hm = horse mackerel quota. % indicates share ownership.

NovaNam has set up a series of joint venture arrangements involving newcomer companies. Typically these are not arrangements between equals. The established operational company comes into such relationships from a position of considerable strength, exercising power within the relationship arising from their financial capacity, marketing access and know-how, and harvesting and processing capacity. The newcomer company, without access to finance and needing to have the catch harvested and sold, have been forced in one way or the other into joint venture relationships that would not have been in their best
interests had an adequate support structure existed. Holding a majority of the shares is of little consequence if the majority shareholders, through force of circumstance, have no real options available to them. Relying on shares in the joint venture to determine where rent accrues is not realistic and generally does not reflect the reality of the power relationships.

NovaNam developed joint venture companies with some of the newcomer companies in the industry as illustrated in Figure 6. If one considers the example of Diaz Fishing (Pty) Ltd, a newcomer company, granted a quota under the affirmative action provisions of the fisheries policy. The interests of the two remaining original shareholders are now held by Diaz Holdings (Pty) Ltd, which has a 12% share in Diaz Fishing. The remaining part of the 51% Namibian share of Diaz Fishing is maintained through the 4% share of an individual, a 35% share held by NovaNam itself, which is Namibian by virtue of the 51% of the shares formally held by the unnamed “Namibian institutions and individuals” and the 2% in the name of the NovaNam Staff Trust. The remaining 49% of the shares are held by Allcom Industries, which appears to be a Cuban owned company not registered in Namibia. All told, it seems that two thirds of the ultimate shareholders of Diaz Fishing are not Namibian. Similarly 57.7% of the ultimate shareholding of Diaz Trawling, which owns the vessel “Diaz”, are not Namibian, despite the fact that the vessel is registered as being Namibian owned.

In the case of Nautilus Fishing Industries, the newcomer company contributing a quota to the joint venture, has a 42% interest in Nautilus Fishing Enterprises which owns the vessel “Nearvera”. Judging from the directorships of the Empire Trawling and Omuhuka Trawling, these two companies have a similar relationship to NovaNam. Whatever the case, NovaNam management run the four joint venture operations. They apply, for example, for the licenses for the four vessels owned by the joint venture companies in the names of the newcomer companies (Register of Fishing Vessels). NovaNam management may argue that they are merely helping out the newcomers but the reality is that the newcomer companies have very little or no operational involvement in running these vessels or in other operational aspects of the harvesting, processing or marketing of the catch. It is hard to accept that these companies are genuinely developing in the fishing industry. It appears that their most active involvement in the industry is the collection of a proportion of the rent in exchange for passing on the quota to NovaNam to fish, process and market.

This is not meant as an accusation against the major companies involved in the industry. They were not set up for the purpose of philanthropy but in order to make a profit and they are simply responding to the set of rules established to

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12 49% held by Allcom Industries, and 49% of the 35% held by NovaNam.
govern the functioning of the industry in the way that is most advantageous to them. Incentives were created to encourage investment in the industry and to expect reward in the form of increased quotas for doing so. It is not surprising that companies then created processing facilities capable of a throughput considerably greater than the quotas they then had. Ways had to be devised by the major companies to use the capacity so established. It is also not meant as a criticism of the small newcomer companies. They have had little or no option, in the absence of access to adequate finance and technical advice, other than to become involved with the major companies in the way that they have done so.

The example does however illustrate how poorly the equity element of Government policy is being met in practice.

NovaNam have control over some 23% of the total hake quota, and also enjoy the benefit of rights in the horse mackerel fishery.

5.2.2. The group of companies associated with Namibia Fishing Industries (Namfish) and the merging with Sea Harvest (Namibia)

Namfish was established in 1947 as the South West Africa Fishing Industries Ltd and is dual listed on the Namibian and Johannesburg stock exchanges. When applications for rights of exploitation were submitted in 1983 to the MFMR, the Ministry required from applicants details regarding the beneficial share ownership of the companies in order to determine the extent to which they were Namibian owned. Namfish, together with its sister company, Namibia Sea Products (Namsea), made the case to the MFMR that it was not possible for them to determine the nationality of their shareholders because, as listed companies, they have over 2000 shareholders each. 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).

The company's principal shareholders made extensive use of nominees shareholders

\footnote{A person, company or trust holding shares on behalf of the beneficial shareholders.}

Whatever the reason for which this might be done, it has the effect of hiding the true identity of the beneficial shareholders and, in so doing, of nullifying the efficacy of the provision of the Companies Act which makes it an offence for a company to withhold information about its shareholdings (South Africa 1973, s113(1)).
Figure 7: Cluster of companies associated with Namfish.

Note: p=pilchard; hw=hake wet quota; hf = hake freezer quota; tuna right = has a right to fish for tuna; hm = horse mackerel. % indicates share ownership

1Both have a share in the vessel Reinoyfisk together with Namsea, Namfish, Mukorob Fishing Company and Sarusas Development Corporation.

2Mortgage for vessel 'Alert III' from United Fishing Enterprises.

Namsea, with more than three quarters of its shares held by nominees in the mid-1990s, in turn held 36.6% of the shares in Namfish, either directly or through its wholly owned subsidiary, Sarusas Development Corporation. A further 40% of Namfish's shares were held by nominee shareholders. In total some 76.6% of the
shares were held by nominee shareholders or by Namsea, the vast majority of whose share were held by nominees.

It transpired that the identity of the principal shareholder, P.C. Kuttel, a Cape Town fisheries entrepreneur, was well known as he and his family were identified in a Johannesburg Stock Exchange handbook as being the principle shareholder in Namsea and Namfish (JSE, 1996). The use of nominees was clearly used in this instance to present a veneer of being Namibian and so claim the generous levy rebates.

The activities of Namfish and Namsea have become less intertwined than they were in the mid-1990s as a result of a rationalisation of their respective activities. Namfish sold their interests in the pelagic sub-sector to Namsea so as to enable Namfish to focus principally on the hake sub-sector. Figure 7 above graphically presents the new structure of Namfish and Namsea as it was in early 2000.

In order to rationalise the use of resources, Namfish, through its wholly owned subsidiary Northern Fishing Industries, made two major strategic moves aimed at accumulating more quota to match their processing and fleet capacity. The first was the creation of a joint venture operation, Etale Fishing, with three newcomer companies: Northern Fishing have a 55% share in the Etale Fishing, and the three newcomers between them have a 45% share. The operational side of the joint venture arrangement is in the hands of Northern Fishing and the involvement of the three newcomer companies is to deliver quota to the operation.

The second important strategic decision was the purchase of the Namibian Fishing Company (NamCo) group, the holding company of Cato Fishing. The Group own a freezer factory trawler, wetfish trawlers and line fish vessels but no shore-based processing facilities. Namfish had under-utilised shore processing capacity. By combining the two groups it was possible to considerably increase efficiency by matching the quotas available to the enlarged group with catching and processing capacity. These developments in Namfish have been very positive for the company.

Two more recent developments have been the establishment of a joint venture operation with Neoplan Fishing and Marine Products, another newcomer company and the merging of Namfish and Sea Harvest (Namibia) coupled with the purchase by Sea Harvest South Africa (see Figure 8) of a 34.5% share in Namfish (Fishing News International, 2000, p26), forging even greater consolidation within the hake fishery. Namsea no longer has a share in Namfish (ibid.).

Namfish and Neoplan Fishing and Marine Products each a have a 50% interest in the joint venture operation, Neoplan Trawling. The agreement provides for
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Neoplan Fishing delivering the quote to the joint venture and Namfish providing the catching, processing and marketing (Ibid.)

The merging with Sea Harvest (Namibia), which operates out of Lüderitz in the hake and rock lobster fisheries (Ibid.), through the acquisition of an 34.5% interest in Namfish by Sea Harvest (South Africa) raises the question as to who is really in control of Namfish. Is it perhaps Sea Harvest (South Africa)?

**Figure 8: The Sea Harvest Corporation and its associated companies.**

Source: hw= hake wet quota; hf = hake freezer quota; hm = horse mackerel
Sea Harvest (South Africa), together with Irvin and Johnson, dominate the hake fishery in South Africa. The ownership structure of Sea Harvest (South Africa) presented in

Figure 8 makes it clear that it is very difficult to be sure where the control of Sea Harvest lies. McGregor’s Who owns Whom in South Africa 1999 (McGregor’s 1999a), offers its "assessment of the identity of the ultimate controlling shareholder" as being "SA Mutual via Tiger Oats® and Real African Investments". SA Mutual is a large South African financial services company whose main business is pensions and life insurance.

This cluster of companies around the merged Namfish/Sea Harvest enterprise have accumulated about 14.5% of the total hake quota, and also have interests in the monk and sole and the tuna fisheries.

5.2.3. Tunacor Group and Cadilu

Another concentration of hake quotas surrounds the array of enterprises established by, or with the involvement of, Messrs. Jose Luis Bastos, Manuel de Conceicao de Castro and Diamantino Fufino de Silva Correia which are depicted in Figure 9.

Cadilu was established by Messrs Bastos, de Castro and Correia, who between them held 51% of the shares in equal allotments, together with the large Spanish fishing company, Eduardo Vieira SA, which held the remaining 49%. The three subsequently sold their shares to Eduardo Vieira SA, which lays claim to being the world’s biggest hake quota holder (Fishing News International 2000b), and to The Commonwealth Development Corporation so that the former holds 83.3% of the shares and the latter 16.7%. Cadilu is thus 100% foreign owned.

The three fisheries entrepreneurs have continued their co-operation with Cadilu through the establishment of Namivisa Holdings, in which Cadilu holds 49% of the shares and the three hold 17% each, that is the remaining 51% between them. Cadilu and Namivisa Holdings jointly own the hake freezer trawlers, Rosendo de Vila and the Vieirasa Tres (MWTC, Register). As Namivisa Holdings is 51% Namibian owned, it is a majority owned Namibian company. It was not possible to establish the percentage ownership of these vessels, but if Namivisa Holdings then owns 51% of the shares of the vessels it could be argued that the vessels are majority Namibian owned, in as much as a Namibian company would own 51% of the shares. However, the beneficial shareholding in such an instance

\[19\] Note that Tiger Oats also has an interest in Erongo Sea Products and associated companies, through the Oceana Fishing Group, a South African company.
would be 74% foreign (48% + (48x51%)) and 25% Namibian owned, due to the share that Cadilu has in Namivisa Holdings. Yet the MFMR seems to regard these vessels as Namibian for the purposes of levy rebates.

Figure 9: Enterprises associated with M Messrs Bastos, de Castro and Correia

Notes: * O = ordinary shares; P = preference shares; p= paid-in; hw= hake wet quota; hf = hake freezer quota; tuna right = has a right to fish for tuna; hm = horse mackerel

'vessels 'Nossob' and 'Kunene' used by these companies respectively are 50% owned by the company and 50% by Namib Fisheries in each case. Namib Fisheries probably have substantial interest or control.

The hake freezer quotas of Oryx Fisheries, Helgoland Fishing and Blue Sea Fishing appear to be linked to Cadilu, although the shareholdings of these companies was not traced. They are described as associated companies (Stuttaford 1998) and two of the three directors of Oryx and Helgoland are Messrs. DRDS Correia and J. Lloves Vieira in each case (ibid.).
The Tunacor Group are another main group of companies involving the three fisheries entrepreneurs. Namib Fisheries, a wholly owned subsidiary of the Tunacor Group, has substantial quotas in the hake freezer and wet fish fisheries and has a pilchard right. They have also gained control of several newcomer companies whose hake and pilchard quotas they harvest and process.

Two Spanish companies, Pascapuerta SA and Frigorificos SA hold 38% and 11% of the ordinary and preference shares respectively, i.e. 46% of the ordinary shares and of the preference shares between them. Most of the remainder of the Tunacor shares are held by the Messrs Bastos, de Castro and Correia either directly or through Trademar (Pty) Ltd; 1.7% of the shares are held by another of the directors.

A third cluster of companies, which the three business partners have created, surrounds Corvima Investments (Figure 9)\(^9\). In this instance they have gained hake and tuna rights through taking control of three of the smaller rights-holding companies.

They also have interests in Voorbok Fishing which has a monk and sole right and in Swordfish Namibia which is engaged in experimental fishing for swordfish in the Namibian EEZ.

If the quotas and rights are considered together, then this cluster of companies have control over about 28% of the hake quota, and interests in the pilchard, horse mackerel and tuna fisheries.

5.2.4. Gendor

Gendor Fishing was established in 1994 initially to undertake exploratory fishing for orange roughy and other deep-water resources. Gendor Holdings was established in 1998 and the new entity took over the shares of the Gendor Fishing (Pty) Ltd and Deep Ocean Resources Ltd.

Through a series of mergers and acquisitions it has acquired quotas in the hake freezer and wet fish sub-sectors and was granted rights in the orange roughy / alfonso fishery. Gendev of Namibia, a major shareholder in Gendor, have rights in the horse mackerel and pilchard fisheries.

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\(^9\) In 1996 the three partners each held one of the three shares that had been issued. It was not possible to check on the current shareholding as the register of member had apparently been temporarily mistaid.
Figure 10: Gendor Holdings and associated companies.

Source: p=pilchard; hw=hake wet quota; hf = hake freezer quota; OR/A = orange roughy/alfonsino; hm = horse mackerel

1ownership details not traced. Could be tied into Gendav as vessel ‘Sulderkus’ harvests both companies pilchard quota.
2purchased from Namcoast December 1998.

In 1999, Gendor acquired through a merger, two companies, Eros Fishing and Mangetti Fishing, that held fish rights in the hake fishery, with quotas in for both freezer and wet fish vessels. These two companies had been involved in a joint
venture operation involving their parent company, Zeora Holdings\(^*\) and Oya Namibia, wholly owned by Barconoya SA, a Spanish fishing company. Zeora, through its two subsidiaries, and Oya Namibia each held a 50% share in Coastal Marine, which owned two wet fish vessels and a white fish processing plant (Gendor 1999). The freezer trawler, Conbaroiva IV, used for fishing the quotas of Eros Fishing and Mangetti Fishing, was sold by Oya Namibia to Gendor through a share issue of 29 000 000 shares of 100 cents per share (ibid).

In addition, Gendor "acquired a monk concession and the vessel MFV Estra Cruz from Namcoast (Pty) Ltd with effect from December 1998 for N$9.1m." The emphasis in Gendor's annual report was about acquiring a right which fitted well with Gendor's resource and asset base (Gendor 1998). Judging from the age and size of the vessel, most of the N$9.1 million paid to Namcoast represented the sale of a right of exploitation.

The Estra Cruz (76.7 gross registered tonnes), built 1964, was replaced by the Whitby, recently extensively refitted and converted into a freezer trawler. It is a larger vessel of 193 GRT and probably represents a considerable increase in fishing effort associated with the right.

The Gendor cluster of companies enjoy 5.5% of the hake quota, 50% of the orange roughy / alfonsino quota, 9.5% of the pilchard quota, 5% of the horse mackerel quota, and rights in the tuna and monk/sole fisheries.

**5.2.5. Consortium, Kuiseb and Irvin and Johnson**

Further consolidation in the hake fishery has taken place with the formation of Hangana Seafoods. This is a joint venture between Consortium Fisheries Ltd, a fishing company ultimately owned by the wealthy List family, and Kuiseb Fish Products, a company controlled by Irvin and Johnson Ltd, the large, established South African fishing company, which, together with Sea Harvest, dominate the South African hake fishery. At the time of Namibia's independence, Kuiseb Fish Products was a wholly owned subsidiary of Irvin and Johnson (I&J). I&J is controlled by the South African Hersov family (see Profile's 2000) mainly through Anglovaal Industries Ltd. These relationships are depicted in Figure 11 below.

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 in the early 1990s. Naras Investments' shares in Kuiseb were made up of 49% ordinary shares and a further 2% of non-voting preference

\(^*\) The beneficial shareholders were said to be SWAPO although the shares were actually held by businessmen with close links to SWAPO.
shares. Apart from Naras Investments not having a majority of voting shares, I&J retained 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, at the time, obliged Kuiseb to sell all their production through I&J (Manning 1998). 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 through prices set by I&J for the products sold to it by Kuiseb Fish Products.

Figure 11: The Consortium / Irvin and Johnston joint venture

Source: p=pilchard; m&s = monk and sole right; hw=hake wet quota; hf = hake freezer quota; hm = horse mackerel
Historically Consortium marketed product through I&J, so it is not surprising that a merger would take place between these companies (Moorsom 1984). Hangana Seafoods has its own sales department, but also sells product through Irvin and Johnson under the I&J brandname.

The possibility of Naras Investments exercising any control over the operational side of the industry seems very remote.

Vertical integration makes it possible for companies to shift the costs and revenues within the group to their advantage. Where the power exists to determine where the costs and revenues are reflected, percentage ownership of a quota holding company becomes less significant. It should not be relied upon, therefore, in determining the distribution of benefit from the resource. There is no real price competition for fish in Namibia when it is landed in the port. No auctions exist and, for the most part, the prices are determined internally within the vertically integrated company structure. It is often stated that the biggest profits are made in the processing/marketing of fish. Another way of putting this is that the major companies, who control these aspects of delivering fish products to the market, choose to have any rents accumulate on that end of the process where they would more completely accumulate to rents for themselves. This is rational corporate behaviour for companies that are engaged in a sector that allow this to happen.

The joint venture, Hangana Seafoods, enjoys the benefit of 13.5% of the hake quota, 9.1% of the horse mackerel quota, and significant interests in the pilchard and monk and sole fisheries.

5.3. Overview of quota allocations

It has already been noted that the hake fishery is the most important of Namibia's major fisheries, accounting for over half of the total value of the fisheries sector. The principal focus has thus been on this part of the fisheries sector.

The discussion above analyses in some detail the degree of industrial concentration that has taken place in the Namibian fisheries sector since the implementation of the new fisheries policy in 1994. Table 1 summarises the effect of this on the distribution of quotas, focusing principally on the hake fishery but including the other major fisheries. The groupings of companies achieved through the process of consolidation are explained in the previous section and are reflected in the table.

The first part of the table deals with the companies which are the main beneficiaries of the hake quota allocations, breaking the allocations down into those given for freezing at sea and those granted for landing wet. Columns two
and three, deal with allocations made directly to the companies concerned. These consist of the quotas granted to the companies directly and/or to their subsidiaries. The underlying assumption in this instance is that the benefit of the quotas accrues directly in proportion to the share ownership of companies, so that this would indicate to whom the benefit of the allocations is accruing. The subsidiaries include both wholly owned subsidiaries and those in which the company has a major interest. In the latter case the assignment of the quota of the subsidiary to the major company is calculated on the basis of the percentage ownership of the company. It also includes joint venture arrangements where one party provides quota and the harvesting and processing capacity is provided by the other. The percentage share of the joint venture is used as the basis for dividing the quota.

The fourth column gives the percentage share of the total allocated quota for hake, both that allocated for freezing at sea and that allocated for landing wet.

The fifth and sixth columns give further quota from which these major companies are probably benefiting. They are the part of the quota allocated to the newcomer companies calculated in proportion to the shares in those companies, or the shares in the joint venture companies mediating the use of the quota, which remain in the hands of at least some of the shareholders that originally were granted the quota. They are included here because the power relations within the industry arising from fleet and processing capacity, access to finance, and marketing access and know-how, means that the probable beneficiaries of at least some of the uncollected resource rent are the major companies.

If the hake quotas allocated directly or indirectly to the major companies are considered, then they receive the benefit of about 80.3% of the total hake quota. This is based on the assumption that any resource rent available would accrue according to the distribution of shares in the companies concerned. Thus, where there are joint venture arrangements between newcomer companies and major operating companies, or where shares are held by the major companies in the newcomer companies, then the quota, and therefore the rent, is assumed to be allocated in those proportions. However, while it is evident that the newcomer companies are receiving some proportion of the rent, there is evidence to suggest that it is unlikely that they are managing to capture the full share of the rent in proportion to the shares that they hold (Manning 1998).

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9 The validity of this assumption is doubtful in the cases of small companies which have no power within the industry (Manning 1998). However, in the case of the large companies that exercise considerable power within the industry it is generally valid.
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<th>Rock lobster</th>
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1. Based on estimate that NovaNam claims at least 60% of the rent associated with quota of joint venture arrangements with newcomers. See Figure 9.
2. Blue Anga+Ullandi - 100% Sea Harvest. See Figure 8.
3. Northern Fishing + Ceto Fishing + 55% of Etocha's quota. See Figure 7.
4. For additional hake freezer quota, CRDS Correla and J Lloves Vilaia both director of Namillsa Holdings and Otulceh Fishing. Holand Fishing & Blue Sea is affiliate of these companies (appears linked to Cassili). See Figure 9.
5. Namib Fisheries + 72% Saddle Hilt quota (1995 date) + 45% Namibia Marine Resources. See Figure 3.
6. Includes 91% of Agatha Bay's quota. See Figure 9.
7. see Figure 9, full nature of links unclear but JL Beavis is director of Namibia Fisherman Association which has 100% interest in Swordfish Namibia.
8. 95% beneficial shareholders - List family. See Figure 11.
9. 49% Irvin and Johnson - I&J retain management control by agreement (Manning1998). Figure 11.
10. Government owned company. Quota bought by subsidiary company, Seafarer Whitenfish Corp. which has minority Island interest.
11. Relatively more wealthy owners with access to finance known considerably since independence.
12. Hake quota through 100% owned Eros Fishing and Margosi Fishing. Bought shares in Namcoy from Namcoy (Phy) Ltd. Gender, major shareholder, have horse mackerel and pilchard quotas. See Figure 12.
13. Premier Fishing have 45% share; controlled through management agreement.
14. See Figure 7.
15. See Figure 6.

Table 1: Summary of quota allocations (1999) to larger enterprises.
The set of quotas shown in the table accounts for all of the 19 freezer trawler allocations of hake quota and 25 of the 31 allocations of wet fish quota. This does not mean that the remaining six wet fish allocations are harvested and processed independently. It is simply the case that, due to the financial and time constraints of this research project, the arrangements surrounding the harvesting of these quotas were not traced.

The principal point to be drawn from this is that by far the greater proportion of the total quota allocated goes to the big players in the industry and it is they, rather than the newcomer companies, to whom resource rent mainly accrues. Given the unequal nature of relationships in the industry, the major companies probably capture an even greater proportion of the resource rent than is reflected by the above distribution of quotas. Thus from a policy perspective it is clearly not the case that the newcomers, the real targets of policy, are gaining appreciably from the quota allocations.

A second notable point is that most of these major fishing companies also have significant quotas in other fisheries. One of them, Gendor, has half of the orange roughy quota, two of them, Sea Harvest (Landelii) and the National Fishing Corporation (Seaflower Lobster Corporation), have two thirds of the rock lobster quota and five of the companies have rights in the monk and sole fishery, and together they have 23% of the pilchard quota. Rights are also held in the horse mackerel and tuna fisheries.

The second part of the table deals with pilchard quota allocations. Two further companies, Elbshia Fishing Corporation and Namibia Sea Products, and the smaller companies clustered around them, control 59.5% of the total allocated quota. Together with the pilchard quotas held by those companies that are the major players in the hake fishery, they control 84.4% of the quota accumulated around them. Again, this reflects only those companies whose links have been successfully traced, given the limitations of this investigation.

The pelagic fishery has a long history of acting as a cartel (Moorsom 1984; Manning 1993). The whole pelagic catch needs to be landed at one or other of the canning and fishmeal production facilities. During years when the TAC is particularly low, the viability of the process requires that the entire catch, by arrangement between companies, be landed at one factory where it is turned into fishmeal or canned. This means that any company, whose vessels are nominally functioning independently of the major players, is limited to landing their catch at one or other of the factories, if more than one is functioning. There is a history of cartel type behaviour on the part of the major companies. Prices for the catch were agreed between factories so as to avoid any market determination of prices whereby factories would have to compete with each other for the catches of boats operating independently of them (ibid.).
Most of the small independent operators in the pelagic fishery have been bought out by the big companies as they were unable to sustain the small, uneconomic quotas that they received at times when the pelagic stock was particularly low. In most instances the companies were kept otherwise intact as they are the recipients of quota. They thus simply became conduits for quota to major companies. If open trade in quota were permitted, both in the form of a permanent transfer and in the form of temporary lease, then the companies would not need to go through the antics of such complex corporate structures to achieve these objectives.

Similarly, in the mid-water trawl horse mackerel fishery, Erongo Sea Products and the companies associated with it (see Figure 8), Namsov Fishing Enterprises and the groups of companies already dominant in other fisheries, enjoy over 85% of the total quota allocated for the mid-water trawl fishery. This covers 9 of the 12 rights of exploitation and the quotas associated with them.

The mid-water trawl fleet is made up virtually all of foreign registered vessels. Seven of the 27 vessels are formally owned by companies registered in tax havens (Register of Ships). Thirteen are registered under flags of convenience (St. Vincent and Grenadines being the most popular), including several that are owned by Namibian companies. If the fish is landed in Namibia, there is no levy rebate disadvantage in the vessels being registered under a foreign flag as the levy rebate equals the whole of the quota levy whatever the category of vessel used (See Appendix Two). Most of the horse mackerel catch is transshipped. For vessels transshipping, the advantage for a Namibian company of registering vessels under a flag of convenience must outweigh the levy rebate available to Namibian vessels transshipping, which is N$34.40 per tonne. This rebate is forfeited if the Namibian owned vessels are not registered in Namibia. If a company such as Namsov, which has a quota of 78 875 tonnes, the sum lost in rebate for the year would be N$27,133 million. Some of the Namsov catch is landed in Namibia.
6. Conclusions – implications for policy implementation

The starting point of this assessment of the distributive impact of the management of the Namibia's fisheries sector was an examination of the policies of Government and their implications for the development of both the fisheries sector and the country as a whole.

The economic and social aspects of policy, summed up in section 3.5, express a concern that Namibians, and specifically those who suffered deprivation as a result of the apartheid system, should benefit from Namibia's fisheries resources. In the context of Government policy on poverty alleviation, a particular concern for the management of the fisheries sector should be to ensure that fisheries makes a significant contribution to the reduction of the poverty in Namibia in general, and to the eradication of extreme poverty in particular.

Government policy is also directed towards encouraging a thriving, efficient fishing industry based in Namibia and in which Namibians take an active part at every level of its operations. Namibian policy, in addition, seeks to encourage foreign investment in the Namibian economy. The industry should be based on a healthy marine environment in which fish stocks are allowed to recover from relatively low biomass levels to levels at which they are at their most productive.

The focus of this report is the distributive impact of the fisheries management system and its implications for questions of equity. There is a clear need to address problems associated with the distribution of rent generated by the fishing industry. However, it needs to be done in a way that does not destroy the industrial base that has developed, nor undermine the capacity of the industry to earn normal healthy profits. Difficult though it might be to strike the right balance in achieving this objective, it is of fundamental importance for the future development of Namibia that this issue should now be effectively tackled.

The current trend of declining rent collection by Government is consolidating claims to that rent by the fishing industry that will have serious long-term implications for Namibia and its development. As rights are traded, under whatever guise, they can become very valuable assets if the resource rent is not collected by the Government. In effect, the future rent associated with the right becomes capitalised, so that rights can then change hands at enormously high prices, depending on the market value of the species. This has clearly begun to happen in Namibia where the sale price of shares, or the price paid for the explicit sale of rights (see 5.2.4), reflects increasing proportions of the discounted future stream of resource rents. Once this happens, it becomes more and more difficult for the Government to collect the rent in the future, as future benefit streams, which arise from earning rents associated with the rights, have become capitalised as assets owned by the companies.

Collection of a greater proportion of the rent is also important from the perspective of the nature of the participation in the industry by Namibians. Leaving aside the
working in labouring occupations, a principal form that the involvement of “previously disadvantaged Namibians” has taken, is in holding shares in quota-holding companies and in the collection of a portion of the resource rent associated with these rights. In relation to the size of the industry, genuine operational involvement in the industry of newcomer companies has been minimal. Many of these companies had little choice but to become mere conduits for quota to the rest of the industry.

If newcomer companies are to participate effectively in the industry, an objective of the fisheries policy, then they need to become real, functioning fishing companies in their own right, making day-to-day operational decisions and building up the technical and managerial skills needed to succeed in the industry. Crucially, they also need access to adequate financing arrangements.

The 1991 fisheries White Paper recognised the need for new entrants into the fishing industry to gain access to credit and technical advice, and access to market data and marketing strategies (Namibia, 1991a, p31). This support framework never materialised and a lack of it has meant that most newcomer companies have been subsumed into large corporate conglomerates.

6.1. What the study shows

6.1.1. Rent

Available evidence points to substantial rents accruing to private companies in the fisheries sector, particularly in the hake fishery. These rents, if not collected by the Government, represent profits for the industry in excess of normal profits. They are essentially a subsidy to the industry from a publicly owned resource. Estimates for rent earned during 1998 (see 4.3 above) in the hake, pilchard and horse mackerel fisheries based on Namibia’s national accounts, indicate that rent to the value of N$723 million is being earned by the private sector, assuming a 30% return on capital (Lange forthcoming 2001). In addition, there are other fisheries generating rent which have not been counted in this figure. There is also some evidence of prices for Namibian hake which suggests that some rent is accruing abroad and is not reflected in these figures.

6.1.2. Ownership and control of fishing companies

Although the industry still has the appearance of involving many newcomer companies, this is in part illusory and is, to a large measure, the outcome of the particular system that requires the appearance of diversified ownership of this nature. If companies were able freely to consolidate rights and quotas into larger blocks, if they were permitted to trade in quota, which is what they are doing anyhow, the industry would not have become as complex as it has now become. Under such circumstances the quota of a particular company would simply be purchased by another and added to the quota holding of the purchaser. The
difficulty is that, in the attempt to maintain a façade of a large number of newcomer companies operating in the industry, which allows Government to claim success for its policy, the industry has taken on a complexity that hides or attempts to hide, a much simpler reality. That simpler reality is that massive consolidation of the industry into a handful of large conglomerations has taken place. This has been amply illustrated in the analysis of company shareholding in section 5.3.

Even if the assumption is valid that rent accrues to companies in proportion to the quota they hold and the shareholdings of the companies, then rent is largely accruing to major companies, both Namibian and foreign (see Table 1). Even if it were the case that the rent accrues in proportion to the share ownership, newcomer companies would be receiving a relatively small proportion of the resource rent.

If the rationale for leaving resource rent available to the industry was to enable newcomer companies to get started in the industry, then the rent subsidy is largely accruing to the wrong recipients. Leaving the rent with the private sector in the hope that it will help the newcomer companies to develop, has proved a very inexact instrument in achieving those objectives.

Evidence points to power relationships within the industry having more to do with the distribution of rent than does the ownership of shares (Manning 1993). The larger, operational company has the capacity to extract a proportion of the resource rent associated with the quotas of the smaller companies in the industry whose quotas they harvest, process and market (ibid.). Although some of the rent clearly accrues to the shareholders of the newcomer companies, they probably do not get the rent in proportion to their share of the quota.

6.2. What should happen now – facing reality

The reality is that Namibia now has an established fishing industry, with more than adequate harvesting and processing capacity.

The system of rights of exploitation and quotas that has been established has granted most of the harvesting opportunities to the major companies, either directly or as a result of mergers and acquisitions. Right of exploitation and quotas are far more transferable that would appear to be the case from an examination of the formal rules, as companies find acceptable guises and terminology to achieve this objective.

Instead of buying quote directly, which is not permitted, control of a company is achieved either directly through the purchase of a majority of shares or indirectly through any one of a whole array of agreements that places the right and the quota associated with it in the hands of the major company. These range from joint venture arrangements to management agreements and mortgage arrangements that have sets of conditions attached for repayment. Sometimes the conditions are made so onerous that the company is unable to fulfil its contract and is forced to sell out.
The case has been made that the Namibian system of rights and quotas has taken on many of the characteristics of a transferable quota system. The terminology that surrounds trading in rights and quotas offers a veneer for the trading activities that take place. This is what one would expect in a vibrant sector, now managing to generate considerable wealth and showing promise of generating even greater wealth well into the future. The leasing of quota, or the permanent transfer of rights or quotas though some form of trade, has developed because there has been a need to match up the harvesting and processing capacity with the rights and quotas that are available. A quasi ITQ system has evolved but one which has not been designed to ensure an equitable outcome.

Legally the Miniser could refuse to renew a right of exploitation for a company if he or she believes that the company no longer meets the criteria that formed the basis on which the right was granted in the first instance. If the Minister did attempt to withdraw such rights in instances where the company had so arranged its formal ownership so as to meet the letter of the criteria for granting of the right, then the decision would probably be challenged in court. This might also be the case if the company made the case that, although the circumstances of the company might now be different, it nevertheless met the criteria in a different way which should be sufficient for the Minister to renew the right.

Another part of the reality is that the MFMR does not have the personnel or financial resources available to it to allow it properly to monitor the ownership and control of the industry. The system that it has established assumes that this is possible, and the Ministry, by implication, undertakes to ensure the proper distribution of benefit from Namibia's fisheries resources, which are under its stewardship. To monitor this properly would require that the Ministry keep abreast, not only with companies granted rights and quotas, but also with the array of other companies operating in the industry. For every company that is granted a quota in the industry there are several others operating in some way in the sector. The picture presented in figures 6 -11, although only partial, still gives some idea of the number of companies, other than those directly enjoying rights of exploitation, playing some part in the overall economic activity of the sector. The Ministry would need to keep up to date with the layers of corporate ownership in order to know the identity of the beneficial owners of shares of companies in the industry. It would also need to be able to monitor the flows of revenue and the incidence of costs throughout the integrated operations of the fishing companies and would need to do so across national boundaries.

6.2.1. Some initial immediate steps

The first and most important step is for the Government immediately and substantially to raise the quota fees for hake and other species so as to redirect the resource rent towards the broader interests of Namibian society and particularly towards poverty alleviation. This would need to be undertaken with care, as the setting of quota levies should take account of the variability of the resource and should closely track the prevailing market conditions.
There is no good reason why those who are better off in society should receive gifts of resource rent from Government. This is not to deny both domestic and foreign companies the possibility of earning healthy normal profits but simply to establish the principle that a fair price should be paid for harvesting a publicly owned resource. It is then for Government to ensure that this revenue is put to good use in the interests of development.

Providing subsidies by allowing substantial resource rent to remain with the industry is too indiscriminate an instrument for the efficient achievement of policy objectives. Instead, subsidies should be explicitly granted and targeted for specific purposes through a process that is transparent and for which there is accountability. There are legitimate reasons for granting subsidies, for example, to enable a new set of companies to enter the industry and build themselves up to become efficient operators capable of undertaking the exacting tasks of harvesting and processing, and of marketing fish and fish products on the world market.

This type of subsidy could be part of a more comprehensive support framework involving the provision of independent technical, managerial and financial advice and of access to finance, the absence of which had led to many of the newcomer companies not succeeding in becoming operational, independent entities.

6.2.2. The longer term future.

In the longer term, the MFMR needs to reconsider its stance regarding the transferability of rights and quotas. Despite having rules designed to prevent such trade from taking place, both the temporary leasing of quota and the purchase of quota and rights, has been taking place under a variety of different guises.

The motivation for the MFMR opposing the introduction of individual transferable quotas (ITQs), in the first instance, was the legitimate fear that the rights and quotas granted to small, newcomer companies would rapidly be taken over by better financed and more experienced, established companies within the industry.

Such concern is valid for two reasons. One is that so few Namibians are in positions of controlling and running the industry. This may be tackled in part through a programme of training so that individuals may, in time, take over positions in existing operational companies. It could also be promoted through a targeted programme of subsidies such as that described in 6.2.1 above. The second reason for concern is if the resource rent remains available to the industry. If the resource rent is collected by Government on the other hand, the companies are left with normal profits, involving a reasonable return on capital and labour, and due compensation for risk and entrepreneurship.

The reality is that trade in rights and quota is taking place. It would be better that it should happen in a properly designed and regulated environment, structured so as to allow fairness and confidence that the rights are secure. By making rights permanent and tradable, they become a secure right, enabling confident long-term
planning by the industry and more rational use of resources. An essential element in designing such a system would be to ensure that the resource rent is collected by Government. In this way, the price of quota will not rise to the astronomical levels seen for many fisheries, where the resource rent remains with the industry and becomes capitalised in the quota price.

If all quotas are traded through an open exchange, where quota sold must go to the highest bidder, then the quota prices could themselves be used as an index by which to monitor resource rent in the industry. Much more complete information is available to the industry collectively then is available to Government; this finds expression in the prices at which fishing companies are prepared to trade rights and quota. This could be used by Government to resolve the information problem in setting the levies for quota.

An imaginative approach is called for in resolving this problem in a fair and equitable manner in the interest of the long-term health of the industry and in the interests of the prosperity and development of all of Namibia’s people.
Bibliography


MFMR database. Data supplied by the Ministry of Fisheries and Marine Resources from the Ministry’s electronic database.

MFMR Register, Register of Licences of Fishing Vessels, Ministry of Fisheries and Marine Resources.

MFMR website: www.mfmr.gov.na


MTI Register: Register of Companies, Ministry of Trade and Industry, Government of Republic of Namibia.

MWTC Register, Register of Ships, maintained by the Directorate Marine Affairs, Ministry of Works, Transport and Communication, Government of the Republic of Namibia, Windhoek.


Appendix One: Optimum Fishing Effort And Fleet Capacity

Consider what may happen in a fishery where there are no rules restricting access. 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. If there is an abundance of fish in relation to the demand for them, there would not tend to be a race to catch what there is before others do so. When the demand increases to a point where it goes beyond the capacity of the fish stock to supply, then there would be a race between fishers to catch what fish there are before others manage to do so. The gain that the individual fisher makes by catching a fish all accrues to that particular fisher but the damage that is done to the fish stock as a result of catching the fish is shared by everyone and is not borne by that particular fisher alone. 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. This is the reason for establishing management institutions.

In principle, the management system established should provide incentives that will encourage fishers to eliminate any overcapacity, limit their investment in fishing effort and processing capacity to what would be commensurate with the long term optimal harvesting of fish stocks, and would encourage the interest of the fishers in rebuilding resources and in conservation. The system should include cost-effective enforcement.

The bio-economic dynamics of a fishery

The analysis of the relationship between the biological dynamics of a fish stock and the economics of fishing can be traced back an article by Jens Warming written in Danish in 1911 (Warming 1911). However, credit is generally given to H. Scott Gordon (Gordon 1954) and Anthony D. Scott (Scott 1955), who defined the problem of open access in the fisheries sector in the 1950s. They 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.

The degree to which a fish stock will spread over a specific geographic area in response to depletion or whether it will aggregate, thus being found at the same density but over a smaller geographic area as the stock diminishes, is a general biological difference between many fish stocks. If a stock continues to aggregate densely, the catch per unit of effort does not correctly reflects the size of the exploited stock, if the area occupied by a stock shrinks in proportion to its size. In that case the catch will remain close to constant. Some fish stocks tend to remain

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An earlier version of this appendix, drafted by the author, is included in WHAT (2000).
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. Namibia's hake stocks tend towards this pattern of behaviour. On the other hand, pelagic stocks tend to maintain the same dense aggregations as the stock diminishes in size so that there tends not to be a reduction in the catch per unit of effort. These have important implications for the management of the stocks and the way in which we understand the response of the stocks to fishing.

A pristine fish stock that has never been fished is in a state of equilibrium 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. In reality this equilibrium may be looked upon as a range within which the stock size will vary.

The growth rate of the stock would tend to increase if the stock were to fall in size as a result of fishing. This could happen, inter alia, because there is a greater supply of food per fish as the stock biomass 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 in the life cycle. 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 size of the stock has decreased to a point at which surplus growth in absolute terms reaches a peak and then 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. The relationship is shown in Figure 12a 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. Figure 12 presents the relationship between fishing effort and the sustainable yield 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 12a 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.

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 12, is at Z2. We can thus produce the sustainable yield curve as shown in Figure 12(b).
Figure 12: Relationship between fishing effort and the sustainable yield

Notes: Fig. 12(a) shows the 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) illustrates 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

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 2). A constant price for effort is also assumed so that cost increases proportionately to effort. Thus the straight lines denoting effort in Figure 12 become cost curves in Figure 13. 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 (Zopt) is less than needed to take the maximum sustainable yield (Zmsy), and considerably lower than the equilibrium associated with an open access level of effort (Zeq), where total cost equals total revenue.

Figure 13: 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 Hannesson 1993, p24
In the case where the catch per unit of effort depends on the size of the stock, the optimum level of effort (Zopt) is lower than that needed to catch the biologically determined MSY (Zmsy), and considerably lower than what would be deployed under conditions of open access (Zeq), where total revenue equals total cost and all resource rent tends to be dissipated.

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 many 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.

![Figure 14: Sustainable yield as a function of effort](image)

**Figure 14: Sustainable yield as a function of effort**

**Notes:** 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, p23

This is represented in Figure 14. 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 14. 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.

The total revenue and cost curves derived from this in Figure 15 shows that the maximum rent is obtained at the level of effort needed to harvest the MSY.

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 types of deterministic models of the fishery are based on an assumption that a reliable level of predictability is possible. Further modelling has attempted to deal with questions of uncertainty in fisheries where it is argued that many variables in
the growth of a fishery are, for practical purposes, unpredictable due to the dearth of knowledge about them and the complexity of the functioning of the marine environment.

![Diagram](image)

**Figure 15: Constant catch per unit of effort**

Notes: Zo will be the same as Zmsy
Source: Hannesson, 1993, p23

Random fluctuations in the environmental variables that influence growth introduce some new problems. In particular, the choice of fishing capacity is no longer synonymous with choosing the optimal fishing effort. The optimal fishing capacity for a stock subject to random fluctuations in the environment depends on the nature of those fluctuations in addition to economic and technical factors such as costs and prices. It will typically not be optimal to have a capacity to take exceptionally large allowable catches, but then to have idle capacity in years with adverse conditions and low allowable catches. This makes the choice of effort, considered here as the rate of utilisation of existing fleet capacity, a decision variable distinct from fleet capacity itself. Below we discuss further the question of optimal capacity in conditions of variability.

**Determining optimal capacity: maximising the benefit**

If the fleet and/or processing capacity is greater than the optimum needed to harvest and process the catch, then resource rent is going to be wasted on excess capacity. The difficulty is in determining the optimum fleet size. An optimum capacity for one year could be greater or less than the optimum capacity for the next year. The extent to which this is so will depend on the variability of the size of the target stock.
The biomass of most fish stocks, to a greater or lesser degree, varies in size over a time scale of several years. This may have profound implications for the optimal size of the fleet that may be required to harvest the catch and the processing capacity that may be required.

To illustrate let us take an example of a hypothetical fishery targeting a stock whose biomass varies in size on roughly a ten-year time scale (Table 2). When the environmental conditions are most favourable and the biomass is at its largest, 12 vessels just manage to harvest the catch. This is clearly the optimal fleet capacity for that year. At the point when the environmental conditions are most hostile to this stock, the biomass plummets so that only 5 vessels are needed to take what is considered the optimal catch for that year. Vessels, however, have a life of 2 to 3 decades. Thus, if you allow capacity to build up so that you are able to harvest the whole catch in the best years, then you will need to carry the overcapacity for the remainder of the time when environmental conditions cannot support such a large biomass. It would also not make sense to reduce the fleet capacity so that all vessels are always fully employed. In most instances it would be more economically optimal to have some of the vessels idle for part of the time.

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of vessels in fleet:</th>
<th>12</th>
<th>11</th>
<th>10</th>
<th>9</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Excess</td>
<td>Units of fish</td>
<td>Units of fish</td>
<td>Units of fish</td>
<td>Units of fish</td>
<td>Units of fish</td>
<td>Units of fish</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>number</td>
<td>not caught</td>
<td>not caught</td>
<td>not caught</td>
<td>not caught</td>
<td>not caught</td>
<td>not caught</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vessel/year overcapacity, units of fish not caught</td>
<td>37</td>
<td>28</td>
<td>15</td>
<td>10</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Loss of vessel opportunity cost = $2m each; value of catch not caught = $1m per unit</td>
<td>$74m</td>
<td>$50.5m</td>
<td>$39.2m</td>
<td>$28.4m</td>
<td>$17.6m</td>
<td>$16.8m</td>
<td>$16.0m</td>
<td>$15.3m</td>
</tr>
<tr>
<td></td>
<td>Loss of vessel opportunity cost = $2m each; value of catch not caught = $2m per unit</td>
<td>$74m</td>
<td>$50.5m</td>
<td>$39.2m</td>
<td>$28.4m</td>
<td>$17.6m</td>
<td>$16.8m</td>
<td>$16.0m</td>
<td>$15.3m</td>
</tr>
<tr>
<td></td>
<td>Loss of vessel opportunity cost = $2m each; value of catch not caught = $4m per unit</td>
<td>$74m</td>
<td>$50.5m</td>
<td>$39.2m</td>
<td>$28.4m</td>
<td>$17.6m</td>
<td>$16.8m</td>
<td>$16.0m</td>
<td>$15.3m</td>
</tr>
<tr>
<td></td>
<td>Loss of vessel opportunity cost = $0.5m each; value of catch not caught = $6m per unit</td>
<td>$18.5m</td>
<td>$14.6m</td>
<td>$10.7m</td>
<td>$6.8m</td>
<td>$3.0m</td>
<td>$2.1m</td>
<td>$1.3m</td>
<td>$1.5m</td>
</tr>
</tbody>
</table>

Table 2: Illustration of optimal fleet capacity in conditions of variability of fisheries resources.

The optimal capacity for the whole period will be determined by the opportunity costs of having vessels lying idle for part of the time and the net value of lost harvest due to capacity being less in some years than what is needed to harvest the catch.
In the table above the number of vessels in excess of those needed to harvest the catch for each year and the units of catch not caught for the year because of under-capacity for that year are set out for each size of fleet between 12 and 5 vessels. For illustrative purposes different arbitrary values are used for the opportunity cost of overcapacity and for the net value of uncaught catch. The optimum fleet size for the decade is highlighted for each cost scenario. In the last instance, the optimal capacity is that needed to take the full catch in the best year because the value of the catch is very high in relation to the opportunity cost of excess capacity.

It becomes clear from this example that the optimal fleet capacity for the longer term is likely to be below the optimal in good years but that this is dependent on the net value of the catch in relation to the opportunity cost of excess capacity. A fleet size greater than this would include excess capacity.

Conclusion

The development of an open access fishery may be summarised as follows. When a pristine 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 depleted. Catch rates and profits fall to a point where most of the fishers just break even. If fishing effort is further increased, 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 assumption that, for a particular 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 1997). 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 assessments. If, however, these concepts are regarded as broad ranges rather than precise targets they do offer a conceptual framework within which 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.
Appendix Two: The Namibian fisheries management system

The Namibian fisheries management system is based on the Sea Fisheries Act (1982) which gives rise to the Sea Fisheries Regulations (1993). The Sea Fisheries Act is in the process of being updated.

The essential elements of the system are as follows:

1. A 'right of exploitation' is required to harvest each commercial species of fish or other living marine resource. Rights are granted for ten, seven and four years.

2. Total allowable catches (TACs), divisible into individual quotas, are set annually for seven species: hake, horse mackerel, orange roughy, alfonisio, pilchard, red crab and rock lobster. Quotas may only be allocated to the holder of a right of exploitation.

3. Licences are required for all vessels fishing in Namibian waters. Licences are used to limit fishing effort for fisheries not subject of a TAC and quota allocation.

4. The basis for the length of time a right is granted are as follows:
   - A ten year right is granted to a rights holder that is an enterprise at least 90% Namibian owned, with a significant investment in vessels or onshore processing facilities where 50% ownership of these inputs is regarded as significant. If the venture is large, a smaller percentage ownership of vessels and processing plants may qualify the rights holder for a 10-year right. Ten year rights are also granted to ventures with a greater proportion of foreign ownership if they make a major contribution to the development of Namibia; employment of more than 500 Namibians on shore in the fishery concerned is considered a major contribution. Ten year rights may also be given to enterprises that make an innovative contribution to the development of the fishing industry, such as developing new products or new export markets, where a longer term right is needed in order to secure the investment.

   - Seven year rights are granted to all other majority Namibian owned enterprises with at least a 50% interest in a vessel or onshore processing facility in the relevant fishery. Ventures with less than 51% Namibian ownership but which have made an investment in onshore facilities in the fishery for which rights are sought may be granted a seven year right.

   - Four year rights are granted to enterprises that are majority Namibian owned but which do not have a 50% or greater ownership of a vessel or onshore processing plant in the fishery concerned. Other enterprises with less than 50% Namibian ownership may also be granted a four year right.

Note: If a venture granted a four or seven year right later fulfill the conditions for a longer term right, then that right may be extended on review by the Ministry of Fisheries and Marine Resources (MFMR). Similarly, if an
enterprise no longer fulfills the criteria for which the right is granted, the right may be withdrawn or shortened.

5. The structure of quota fees was established to encourage Namibian registration and ownership of fishing vessels. The following definitions are used in the Sea Fisheries Regulations:

- A **Namibian vessel** is one registered in Namibia, permanently based in Namibian waters, flies the Namibian flag and in which at Namibians enjoy at least 51% beneficial ownership and whose crew is at least 80% Namibian.

- A **Namibian based vessel** is one registered in Namibia, permanently based in Namibian waters, flies the Namibian flag, but has less that 51% beneficial Namibian ownership and a crew of whom less than 80% are Namibian.

- **Foreign vessels** are those that do not qualify as Namibian or Namibian based vessels.

6. The quota fees, charged per tonne, are based on these definitions of vessels and on whether or not the catch is landed for onshore processing. Quota fees were increased by 10% in May 1999. The fee for most of the decade is given in brackets:

<table>
<thead>
<tr>
<th>Species</th>
<th>Hake</th>
<th>Horse mackerel</th>
<th>pilchard</th>
<th>tuna</th>
<th>Orange roughy</th>
<th>Red crab and spider crab</th>
<th>Rock lobster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign vessel</td>
<td>N$880 (800)</td>
<td>N$68.80 (63.58)</td>
<td>None set</td>
<td>?(400)</td>
<td></td>
<td>N$695.00 (600)</td>
<td></td>
</tr>
<tr>
<td>Namibian based vessel</td>
<td>N$680 (500)</td>
<td>N$51.60 (45.36)</td>
<td>N$165.00 (130)</td>
<td></td>
<td></td>
<td>N$495.00 (450)</td>
<td></td>
</tr>
<tr>
<td>Namibian vessel</td>
<td>N$440 (400)</td>
<td>N$34.40 (31.30)</td>
<td>N$110.00 (100)</td>
<td></td>
<td></td>
<td>N$330.00 (300)</td>
<td>N$1,100.00 (100)</td>
</tr>
<tr>
<td>Additional rebate per metric tonne if landed for onshore processing</td>
<td>N$220</td>
<td>relate equal to the full quota fee</td>
<td></td>
<td></td>
<td></td>
<td>N$165.00 (100)</td>
<td></td>
</tr>
<tr>
<td>Catching of pilchard for the purpose of processing fish-meal</td>
<td>N$27.30 (25.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Levied on catch, as tuna was not a quota fishery. Catch levy of N$1200 for catches for the sashimi market.

7. It is illegal in the Namibian fisheries to discard "any edible or marketable fish taken as by-catch" (Namibia, 1993a, reg. 42). Annexure M of the Sea Fisheries Regulations specifies 19 species which shall not be discarded. The thinking behind by-catch fees are that they should be set high enough to discourage the targeting of species without being in possession of a right to do so, but low enough to make it worthwhile to land them.
By-catch fees are set as follows: heke caught in midwater trawl NS 1200
kingklip 2400
monk 4300
kabeljou 2400
staanbras 2400
orange roughy 6500
alfonsino 3000

8. Fees are payable for licences to fish and licences for premises, vessels or vehicles used as factories:

1. fishing vessels licence fees payable annually for each vessel with a gross tonnage of:
   • less than 10 tonnes NS 20
   • 10 tonnes or more but less than 50 tons NS 50
   • 50 tonnes or more but less than 100 tonnes NS 100
   • 100 tons and more NS 200

2. licence fees, payable annually for premises, vehicles or vessels used as factories:
   • For any premises, vessel or vehicle, excluding a fishing vessel, used as a factory registered or liable for registration in terms of the Factories, Machinery and Building Work Ordinance, 1952 (Ordinance 34 of 1952): NS 500
   • For any vehicle or vessel, excluding a fishing vessel: NS 100
   • For each fishing vessel, used as a factory:
     -with a gross tonnage of: less than 4499 tonnes NS 20
     -between 4500 and 8999 tonnes NS 500
     -9000 tonnes and more NS 1000
     The amount paid or payable for the fishing vessel licence is to be deducted from these amounts.

9. Sea Fisheries Fund contributions are charged per tonne on actual catch. The Fund is used to fund fisheries research. The following levies are payable:

<table>
<thead>
<tr>
<th>Fish品</th>
<th>(i) Intended for human consumption</th>
<th>NS 25.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii)</td>
<td>Intended for bait or be processed into fishmeal</td>
<td>10.00</td>
</tr>
<tr>
<td>other pelagic fish</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Kingklip</td>
<td>25.00</td>
<td></td>
</tr>
<tr>
<td>Monk</td>
<td>25.00</td>
<td></td>
</tr>
<tr>
<td>South Coast sole</td>
<td>25.00</td>
<td></td>
</tr>
<tr>
<td>hake (i) White fish</td>
<td>18.00</td>
<td></td>
</tr>
<tr>
<td>(iii) Hosed and gutted</td>
<td>25.00</td>
<td></td>
</tr>
<tr>
<td>(iv) Fillets</td>
<td>45.00</td>
<td></td>
</tr>
<tr>
<td>(v) Broken sour</td>
<td>23.00</td>
<td></td>
</tr>
<tr>
<td>rock lobster</td>
<td>125.00</td>
<td></td>
</tr>
<tr>
<td>hake macarela</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>tuna (i) Intended for sashimi</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td>(ii) Caught by pole and line method</td>
<td>25.00</td>
<td></td>
</tr>
<tr>
<td>Crab</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td>Orange mugga</td>
<td>150.00</td>
<td></td>
</tr>
<tr>
<td>Alfonzino</td>
<td>100.00</td>
<td></td>
</tr>
<tr>
<td>Cardinal fish</td>
<td>60.00</td>
<td></td>
</tr>
<tr>
<td>Gregory</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td>Koi, steenbras, sneek, blacktail, galjoen</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Any other species</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>
10. The monitoring, control and surveillance of the Namibian fisheries sector is undertaken by the Directorate of Operations of the MFMR. Sea and air surveillance is undertaken of fishing activities and landings and transhipments are also monitored. The MFMR employs about 100 fisheries inspectors and has a comprehensive observer programme in operation. Observers also undertake sampling of the catch for scientific purposes.
Appendix Three: Size/weight profile of the hake catch

Figure 16: Size/weight profile of the hake catch for three years between 1997 – 1999.

Source: Data from Ministry of Fisheries and Marine Resources

The three graphs for the years 1997-1999 are generated from the sampling data of the catch of commercial vessels in the hake fishery collected by MFMR personnel. They indicate that the size/weight makeup of the catch has been improving over the three year period. Apart from the average price rise as shown in Figure 2, prices must also be rising because the size of fish making up the catch has been increasing, and larger fish attract better prices.
Appendix Four: Some data on main commercial stocks
(Data: MFNR (1987b); MFNR (1998); MFNR database; GlobeFish (1994-2000))

Hake and other demersal species:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Landings - hake</td>
<td>112,235</td>
<td>130,032</td>
<td>136,993</td>
<td>117,583</td>
<td>158,956</td>
</tr>
<tr>
<td>Landings - mackerel</td>
<td>12,188</td>
<td>10,139</td>
<td>9,748</td>
<td>10,290</td>
<td>16,220</td>
</tr>
<tr>
<td>Landings - hake + mackerel</td>
<td>124,423</td>
<td>140,183</td>
<td>146,741</td>
<td>127,872</td>
<td>175,176</td>
</tr>
<tr>
<td>Landed value current prices</td>
<td>403,9</td>
<td>493,6</td>
<td>569,7</td>
<td>535,4</td>
<td>567,1</td>
</tr>
<tr>
<td>Landed value per tonne current prices</td>
<td>3247,751</td>
<td>3514,781</td>
<td>4208,308</td>
<td>4685,311</td>
<td>4797,295</td>
</tr>
<tr>
<td>Percentage change: 1994-1998</td>
<td>47,7132</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quota fees collected</td>
<td>68,5</td>
<td>65,6</td>
<td>34,2</td>
<td>95</td>
<td>52,3</td>
</tr>
<tr>
<td>Sea fisheries fund levies collected</td>
<td>3,115</td>
<td>2,594</td>
<td>2,356</td>
<td>7,322</td>
<td>2,878</td>
</tr>
<tr>
<td>Total quota fees + fund levies</td>
<td>71,614</td>
<td>68,094</td>
<td>36,59</td>
<td>82,62</td>
<td>54,976</td>
</tr>
<tr>
<td>% fall in fees collected - current values</td>
<td>22,23084</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Monk and hake make up about 95% of the demersal catch.

Horse mackerel - midwater trawl:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Landings</td>
<td>335,618</td>
<td>298,673</td>
<td>228,147</td>
<td>212,821</td>
<td>242,127</td>
</tr>
<tr>
<td>Landed value current prices, N$ m</td>
<td>261,1</td>
<td>207,2</td>
<td>117,1</td>
<td>27,942</td>
<td>162,6</td>
</tr>
<tr>
<td>Landed value per tonne current prices</td>
<td>789,732</td>
<td>516,987</td>
<td>188,125</td>
<td>175,619</td>
<td>180,902</td>
</tr>
<tr>
<td>Percentage change: 1994-1998</td>
<td>136,408</td>
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<tr>
<td>Quota fees N$ m</td>
<td>25,7</td>
<td>21,8</td>
<td>10,7</td>
<td>13,1</td>
<td>15,6</td>
</tr>
<tr>
<td>Sea fisheries fund levies N$ m</td>
<td>2,325</td>
<td>2,595</td>
<td>2,308</td>
<td>2,144</td>
<td>2,932</td>
</tr>
<tr>
<td>Quota fees + sea fisheries fund N$ m</td>
<td>27,935</td>
<td>24,393</td>
<td>13,008</td>
<td>15,244</td>
<td>18,852</td>
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Pelagic:

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<tbody>
<tr>
<td>Landings pilchard</td>
<td>115,629</td>
<td>47,297</td>
<td>1,711</td>
<td>27,862</td>
<td>60,994</td>
</tr>
<tr>
<td>Landings horse mackerel</td>
<td>33,005</td>
<td>51,240</td>
<td>99,004</td>
<td>88,004</td>
<td>70,000</td>
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<tr>
<td>Landed value current prices</td>
<td>1,488,244</td>
<td>940,371</td>
<td>971,552</td>
<td>1,181,758</td>
<td>1,385,952</td>
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<tr>
<td>Percentage change: 1994-1998</td>
<td>106,1</td>
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<tr>
<td>Landed value per tonne current prices</td>
<td>108,1</td>
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<tr>
<td>Percentage change: 1994-1998</td>
<td>106,1</td>
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Rock lobster:

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<tbody>
<tr>
<td>Landings</td>
<td>154</td>
<td>224</td>
<td>269</td>
<td>190</td>
<td>350</td>
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<td>Landed value current prices</td>
<td>6</td>
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<tr>
<td>Landed value per tonne current prices</td>
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<tr>
<td>Percentage change: 1994-1998</td>
<td>18,6</td>
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Orange Roughy/alfonsoina:

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<tbody>
<tr>
<td>Landings - orange roughy</td>
<td>29</td>
<td>637</td>
<td>1,378</td>
<td>18,156</td>
<td>10,945</td>
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<tr>
<td>Landings - alfonsoina</td>
<td>0</td>
<td>990</td>
<td>1,868</td>
<td>3,850</td>
<td>14</td>
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<tr>
<td>Landings - orange roughy + alfonsoina</td>
<td>29</td>
<td>989</td>
<td>1,378</td>
<td>18,156</td>
<td>10,945</td>
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<td>Landed value current prices</td>
<td>0,2</td>
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<tr>
<td>Landed value per tonne current prices</td>
<td>8,873,532</td>
<td>53,29,132</td>
<td>7191,781</td>
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<td>95,11,36</td>
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Crab:

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<tr>
<td>Landings</td>
<td>358</td>
<td>203</td>
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<td>147</td>
<td>220</td>
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<td>Landed value current prices</td>
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<td>1,152,721</td>
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<td>31,33,304</td>
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