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## Namibia's Great White Hope

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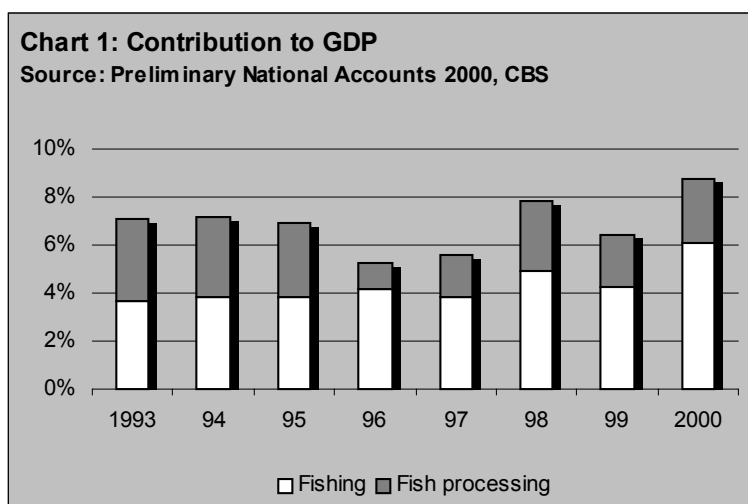
*"What is common to many is taken least care of, for all men have greater regard for what is their own than for what they possess in common with others"*

Aristotle

This briefing paper examines the performance of Namibia's fishing sector since 1990 using statistics produced by the Ministry of Fisheries and Marine Resources. It finds that the white fish sub-sector, comprising mostly of hake, has provided the greatest source of dynamism in the industry while other sub-sectors are either in decline or failing to fulfil their early promise. The white fish industry now accounts for almost 70% of all value added from the fishing sector and about 80% of all value addition on shore. Because the quantity of fish harvested in Namibian waters appears to be reaching a limit, the challenge for policy now must be to spur greater innovation in the rest of the industry, encourage the Namibian fleet to fish on the high seas and promote more onshore processing in Namibia of fish caught outside Namibian waters.

The fishing industry in Namibia makes an important contribution to the country's economy. The latest official estimates for 2000 suggest fishing and fish processing together form an industry with a turnover of almost N\$2.9 billion responsible for exports worth N\$2.8 billion, incomes of N\$2.3 billion as well as many thousands of jobs. This briefing paper examines the performance of the fishing sector using data from the Fisheries Statistics Division in the Directorate of Policy, Planning and Economics in the Ministry of Fisheries and Marine Resources (MFMR).

### Namibia's fishing industry has grown but this growth has reached a plateau...



A critical measure of the performance of any industry is the amount of income or *value added* it generates. Simply stated, value added is the revenue from sales minus the cost of bought-in inputs. It is equivalent to the value of profits, return to capital and labour. Estimates of value added are found in Namibia's national accounts produced by the Central Bureau of Statistics (Central Bureau of Statistics 2001). In Namibia's national accounts, fishing includes any activity that takes place on board a fishing vessel, including preserving and processing of any catch

while fish processing comprises those activities that take place on shore.

The preliminary national accounts for 2000 show that value added from fishing and fish processing together has more than tripled from N\$657 million in 1993 to N\$2,119 million in 2000. In terms of

its contribution to the national economy, the percentage of total value added (GDP) generated from fisheries has risen from 7.0% to 8.8% between 1993 and 2000 as shown in Chart 1. A dip in value added appears to have taken place in 1996 and 1997, largely as a result of a fall in value added from fish processing. The more than tripling of value added in current prices should be compared with changes in *real* value added which are calculated in the prices of a single reference year, in this case 1995, to strip out the effects of price changes. These are shown in

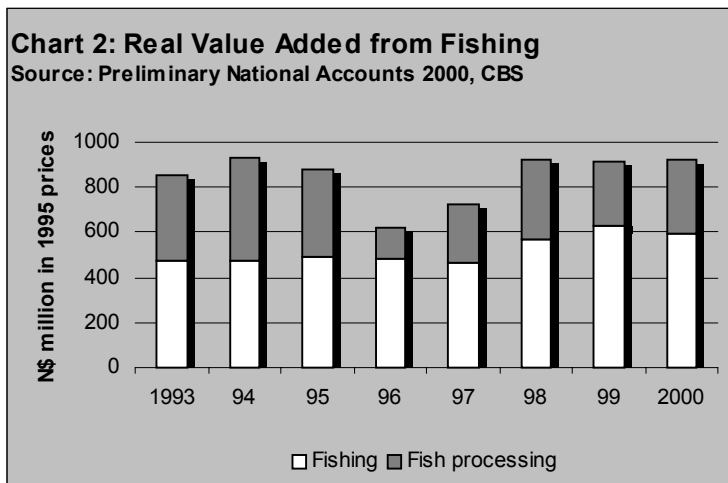
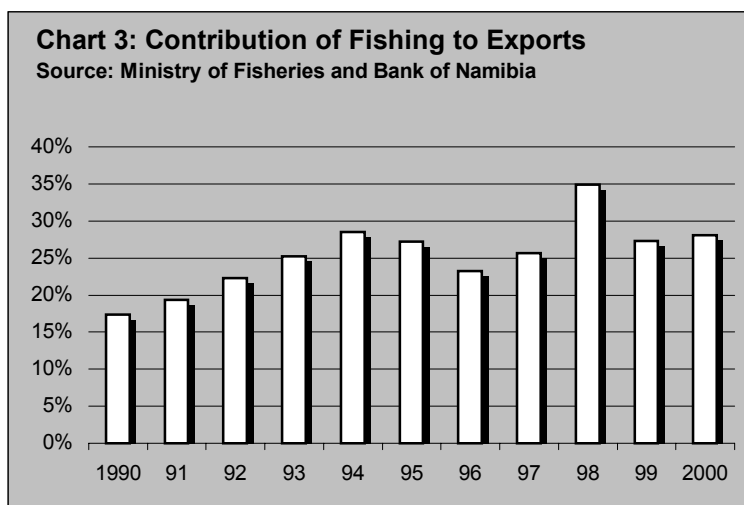


Chart 2. Real value added measured in 1995 prices has grown from N\$851 million in 1993 to N\$926 million in 2000, an average rate of growth of just over 2% a year. Real value added appears to have reached a plateau since 1998.



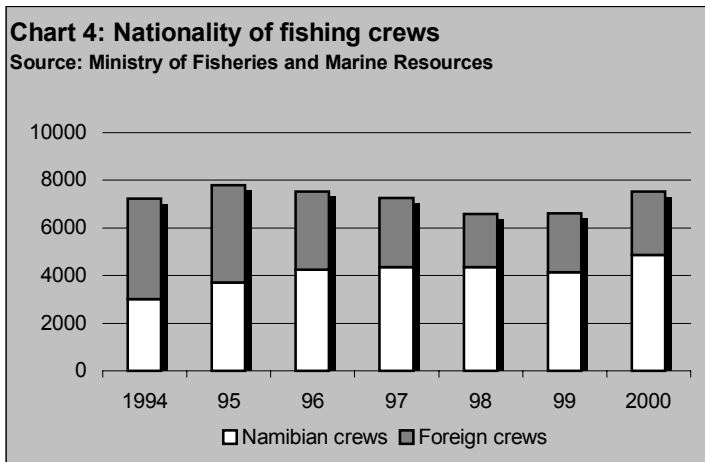
Approximately 98% of the total output of Namibia's fishing industry was exported in 2000, about the same proportion as in 1990, despite Government efforts to encourage Namibians to eat more local fish. In the first half of the 1990s, exports of fish products rose steadily and contributed to a rapidly increasing share of Namibia's merchandise exports, a trend which levelled off in the second half of the decade as shown in Chart 3.

Employment in the fishing industry can be divided between employment on board fishing vessels and employment on shore. The MFMR figures presented in Chart 4 below show that, since 1994, employment at sea has fluctuated between 6,000 and 8,000 people. Growth in employment for Namibians has come about as a result of the Namibianisation of existing posts rather than as a result of growth in the total number of posts available. Approximately 65% of crews are now Namibian compared to 42% in 1994. At the time of writing, no statistics for on shore employment were available from the MFMR.

The above figures for the industry as a whole hide important changes that have taken place within the industry since Independence. To fully appreciate these changes, it is necessary to break down the industry into its components and examine the performance of the separate parts. This analysis



will look at the industry's seven main sub-sectors: pelagic, mid-water, demersal, deep water, tuna, crustaceans, and all other parts.

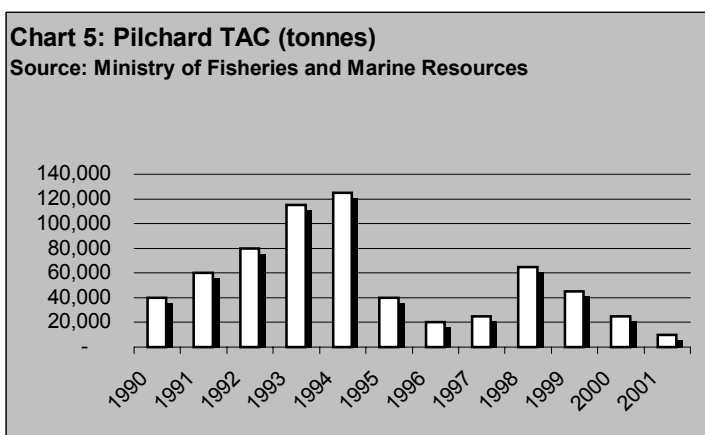


It is also useful to understand the management system the Government has adopted to promote the sustainable use of Namibia's fishing resources. The harvesting of certain species of fish is limited through the setting each year by the Minister of Fisheries of a *Total Allowable Catch (TAC)* – the maximum tonnage of a particular fish that may legally be caught. Six species of fish have so far been subject to such a TAC: pilchard, horse mackerel, hake, crab, rock lobster, alfonsino and orange roughy.

The TAC is determined according to a combination of survey findings from Government research vessels, theoretical modelling work carried out by government scientists, and evidence from actual catches by the industry. TACs can be varied during the course of a fishing season. Inevitably, the final TAC represents something of a compromise by the Minister between the competing forces of pressure from the industry for higher TACs and arguments from the scientists concerned about longer-term sustainability.

To restrict the number of fishing companies able to exploit the Namibian fishing resource, longer-term fishing rights are allocated by the Minister according to a number of criteria designed to help develop the industry, promote Namibianisation and on shore processing. Each year the TAC is divided into quotas and allocated to individual rights holders.

Once fish are caught they must be landed and weighed, a process which is monitored by the MFMR and which forms the basis of the Ministry's fisheries statistics. Monitoring takes place both on board vessels and on shore when the catch is landed. Companies can be penalised for overfishing and pay by-catch fees for other fish they have caught.



### The pelagic industry started brightly but is now in serious trouble...

The pelagic fishery refers to that part of the industry that catches and processes species of fish that live near the surface of the ocean, primarily pilchards, anchovy, and immature horse mackerel. These fish are caught using the purse-seine fishing method which involves using large nets to encircle large groups of fish and then

hauling the net on board. The fishing season generally runs from January to August each year. Pelagic fish are either ground up for fish meal and fish oil or, if they are of sufficient quality, they are canned at factories in Walvis Bay.



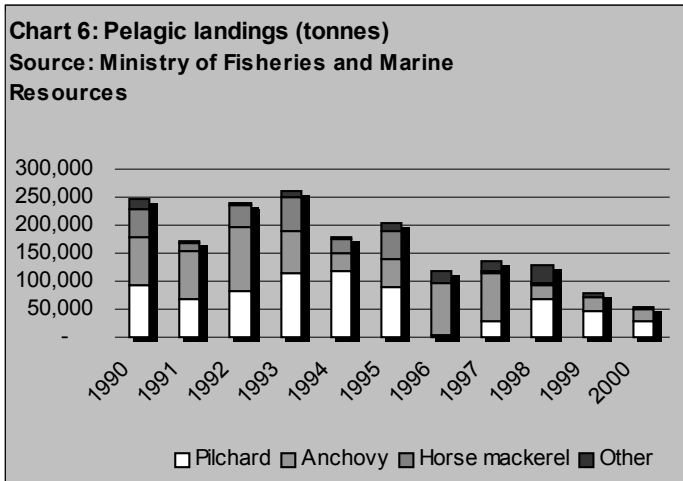
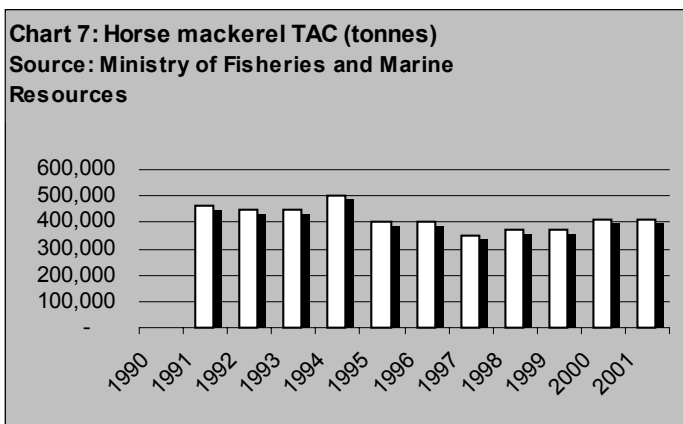


Chart 5 shows that the pilchard TAC rose significantly after Independence but then fell sharply in the mid-1990s. After staging a minor recovery, it has again fallen back to very low levels. The provisional TAC for the 2001 fishing season is the lowest since 1990. The next chart shows the actual landings of pelagic fish since 1990 by main species. It shows that a steep and steady decline has taken place in the landings of all the main species of pelagic fish in line with the overall decline in the pilchard TAC. The years 1996 and 1997 were particularly bad years for pilchard landings. Following the sharp reduction in the pilchard TAC in 1995,

Namibian vessels started catching pilchards in Angolan waters. These catches are included in the charts. In 1996, however, these amounted to little more than 3,000 tonnes and were not sufficient to make up for the drastic scarcity of pelagic fish in Namibian waters. A more detailed breakdown of landings reveals that the proportion of the pilchard catch used for canning has risen since 1990.

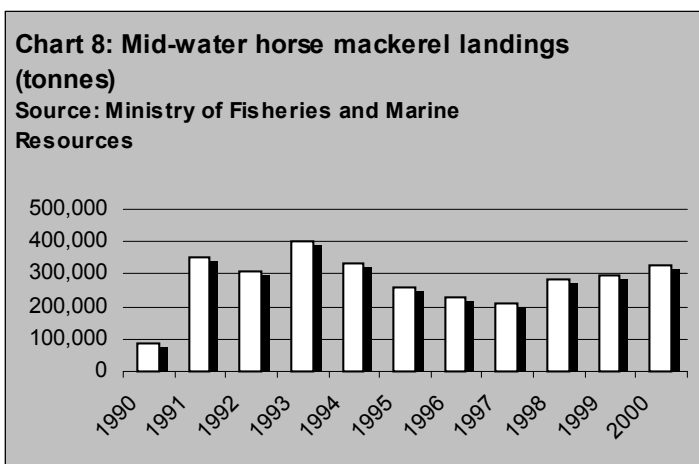
### Mid-water horse mackerel has shown stability rather than dynamism...

The mid-water fishery consists of those fish that live at various levels between the seabed and the surface. These are overwhelmingly horse mackerel. Mid-water fish are caught by factory trawlers which use large nets to drag the fish up to the vessel where fish are processed. The mid-water industry differs from the rest of the fishing industry in that it is still heavily reliant on chartered vessels. Those who possess fishing rights, the concession holders, charter mostly foreign-owned and registered mid-water trawlers and pay some 85% of the catch to the boat owner in return. Only a small number of quota holders actually own their boats. The fishing season runs from January to December. Mid-water horse mackerel is mainly frozen whole at sea but a small amount is dried onshore.



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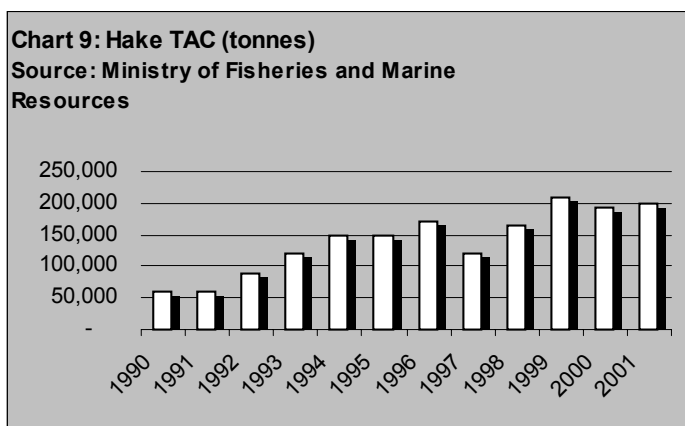
In terms of tonnage landed, the mid-water fishery is by far the largest part of the Namibian fishing industry. Chart 7 shows that the TAC for horse mackerel has been reasonably stable since it was introduced in 1991 displaying, if anything, a slight downward trend over the period. The 1991 White Paper on Fisheries estimated that the long-term sustainable off-take of horse mackerel was between 400,000 and 450,000 tonnes.



The horse mackerel TAC applies to the sum of both pelagic and mid-water horse mackerel. Landings of mid-water horse mackerel are therefore lower than the overall horse mackerel TAC. Landings of mid-water horse mackerel are shown in Chart 8. It shows that landings fell in the mid-1990s but picked up again from 1998.

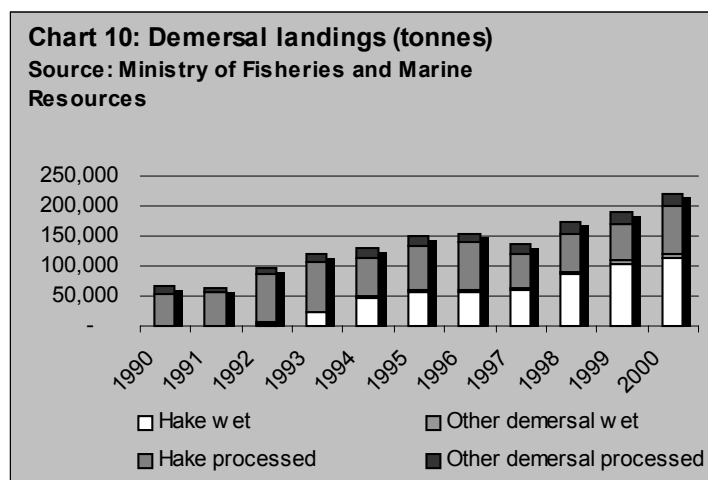
## The demersal fishery has been brought on shore...

The demersal fishery involves the exploitation of species that live near or on the bottom of the sea. These are predominantly hake but include significant and growing quantities of monk. The hake season runs from May to April. Demersal hake can either be processed on board or landed wet for processing on shore and possibly for transport on ice by air to consumers.



The hake TAC has risen steadily over the course of the last decade with the exception of 1997, the only year it has been sharply reduced. This is shown in Chart 9. The 1991 White Paper on Fisheries estimated that the long-term sustainable off-take of hake was between 250,000 and 300,000 tonnes a year. If this is correct there is still some way to go before this figure is reached.

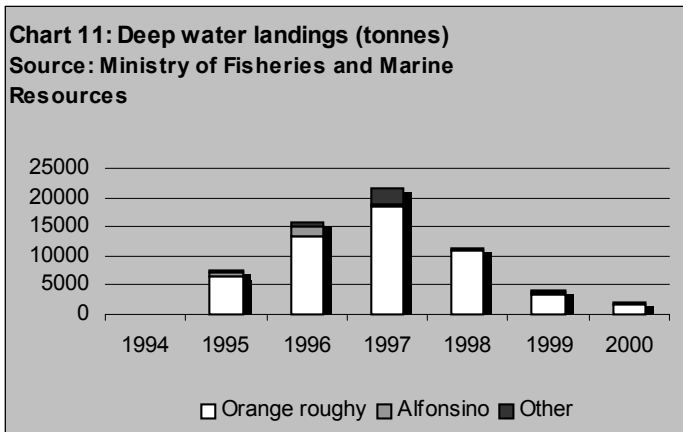
Landings of demersal fish are shown in Chart 10 on the right. It can be seen that, although hake dominates demersal landings, other species, notably monk and horse mackerel are also important. No demersal fish was landed wet at Independence. All processing of demersal fish took place offshore. The proportion of demersal fish landed wet has increased from a mere 5% in 1992 to almost 55% in 2000. For hake alone, approximately 59% was landed wet in 2000, up from less than 6% in 1992.



## ...while the initial hopes for the deep-water fishery have proven unsustainable.

The deep-water fishery in Namibia is relatively new having been pioneered by Gendor in the mid-1990s. It is based on two species that live at great depths in Namibian waters, orange roughy and alfonsino. Sophisticated techniques are required to fish at these depths and scientific knowledge about the species of fish remains inadequate. The orange roughy season lasts from May to the following April. Alfonsino is processed on board fishing vessels while orange roughy is processed on shore.

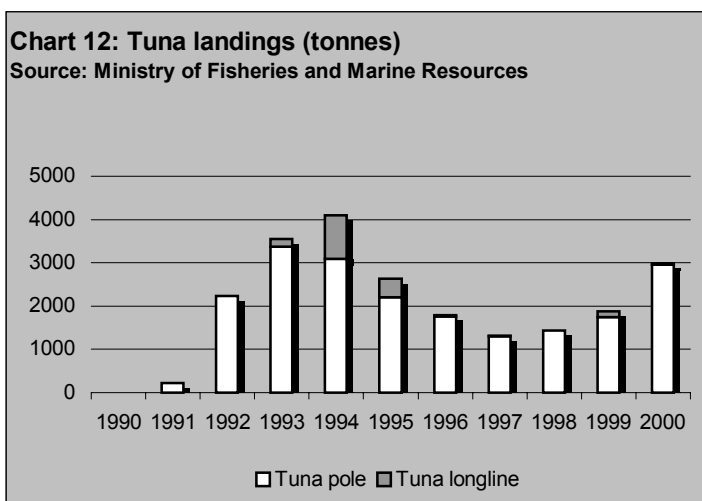




Because the state of knowledge of the new fishery was so limited, both alfonsino and orange roughy have been subject to a TAC. However, for alfonsino this occurred for only a single year 1997 when a TAC of 10,000 tonnes was imposed. Since then, however, alfonsino has become so scarce that it was no longer considered necessary to impose a TAC. The orange roughy TAC was first introduced in 1997 and set at 12,000 tonnes. It has been gradually reduced as evidence accumulated that the species was unlikely to sustain harvesting at this level.

For 2001 the TAC has been set at 1,850 tonnes. As far as landings are concerned, 1997 appears to have been the highpoint of the industry with over 20,000 tonnes of deep-water species landed as shown in Chart 11.

### The initial growth in tuna landings and onshore processing has not been sustained...



Tuna fish has been targeted in Namibian waters since 1991 using two fishing methods, pole and longlining. Pole tuna is used for canning, some of which has taken place in Walvis Bay, while longline tuna fish is used for sashimi – raw fish which is a Japanese delicacy - and fetches three times the price of pole tuna. Chart 12 shows that growth in tuna catches rose rapidly from 1991 to 1994 but then fell. Landings started to rise again only from 1997. Long-lining, where fish are caught by dropping a long line with bait held by floats, has virtually completely given way to fishing with poles or rods.

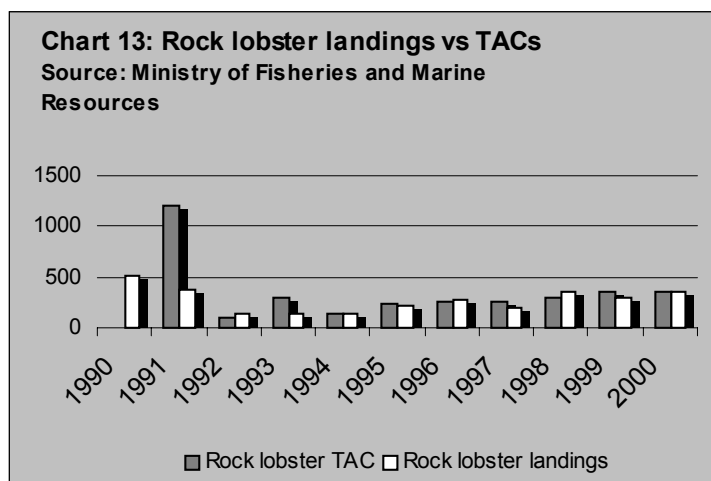
Canning of tuna fish in Walvis Bay took place between 1993 and 1997 but has now been discontinued. Namibian pole tuna is now canned abroad.

### Rock lobster and crab seem to be staging a gradual recovery...

The fifth major component of the fishing industry comprises two crustaceans, rock lobster and crab, both of which are controlled species. Rock lobster are landed wet while crab is shelled and frozen at sea.





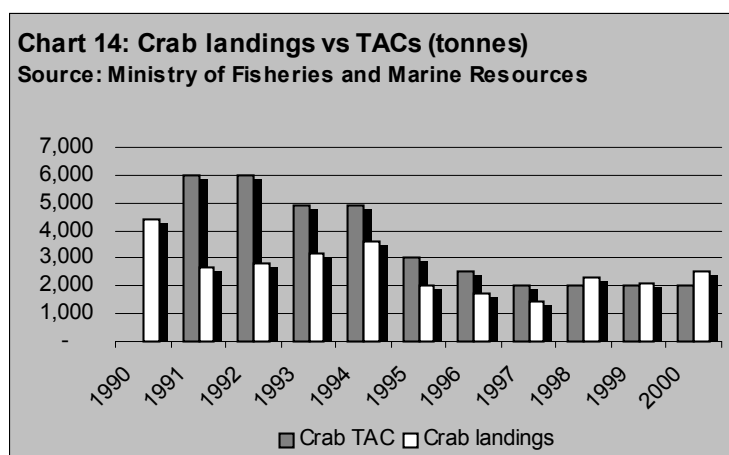


Following the setting of an unrealistically high TAC for rock lobster in 1991, both TACs and landings declined but gradually started to recover towards the end of the decade as shown in Chart 13. TACs appear to have been exceeded in a regular pattern in alternating years.

Chart 14 shows that the first TACs for crab after Independence were also high, far higher than the corresponding catches. Overoptimistic TACs continued to be a feature of the crab industry until 1998 when, for the first time landings exceeded TACs.

**...while the rest of the fishing industry remained relatively insignificant.**

Economically speaking, the pelagic, mid-water, demersal, deep-water, rock lobster and crab fisheries constitute by far the largest elements of Namibia's fishing industry. A number of other marine resources are commercially



exploited including guano, oysters, seals and seaweed. Together these products have never contributed more than 2% to the total value added of the fishing industry since 1990. The quantities harvested are shown in Table 1 below in tonnes with the exception of seals which are measured by the number of seals culled. While guano output has remained fairly constant throughout the period, oyster production has fallen dramatically since its highpoint in 1994. Seals are harvested at Cape Cross and increasingly at Wolf and Atlas Bay and production appears to have reached an eleven year high in 2000. Seaweed production also seems to have increased dramatically in 2000.

**Table 1: Other marine products (in tonnes apart from seals)**

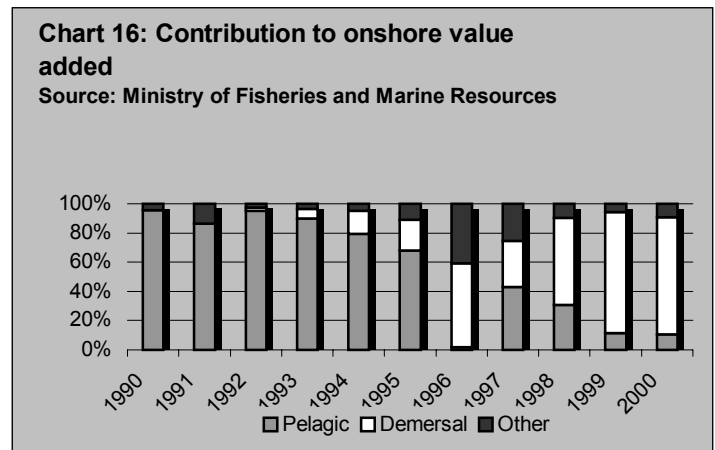
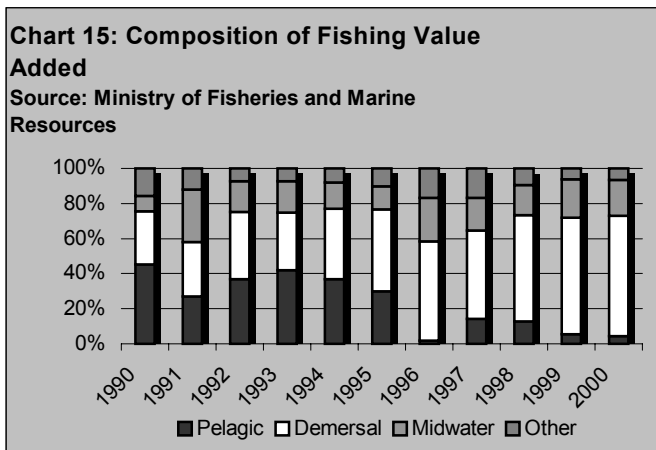
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Guano	4,130	4,130	4,130	4,130	4,130	4,130	4,130	4,104	4,078	4,052	4,026
Oysters					1,553	60	62	50	37	25	12
Seals	9,501	17,325	23,400	35,730	37,853	20,450	16,908	25,783	29,475	25,161	41,753
Seaweed				226	175	799	936	851	897	660	8,229

The previous sections have concentrated on changes in the TACs and landings of the sub-sectors of the fishing industry. This is important in understanding the state of the fishing resources and whether it is being exploited in a sustainable manner. Clearly the various sub-sectors have fared very differently since 1990. Of all the major species, only hake seems to have enjoyed a steady and unambiguous rise in TACs and landings.



## White fish has replaced pelagic fish as the species responsible for most value added...

An economic analysis, however, must focus on the income that is generated from the resource, in other words, the value added. The first section of this briefing paper showed how value added from fishing and fish processing had increased since 1990. Using estimates of value added from the MFMR's database it is possible to examine how each sub-sector has contributed to this performance. If value added from fishing and fish processing is combined, the picture that emerges suggests a fundamental change has taken place in Namibia's fishing industry over the last eleven years as shown in Chart 15. The pelagic industry has gone from generating over 45% of total value added to little more than 4% while the demersal industry has expanded from 30% to over 68% of the industry's entire value added. Value added from the mid-water industry has not undergone a clear trend and appears to be relatively stable while the contribution of all remaining sub-sectors has declined from over 15% to under 7% in the same period. In terms of value addition, there is little doubt that the demersal or white fish industry is now by far the most important part of the fishing industry.



## ...and white fish now dominates land-based processing.

Looking at value added through on shore processing, the decline of the pelagic sub-sector and the rise of the demersal sub-sector is even more extreme. In 1990 processing of pelagic fish accounted for over 95% of on shore processing. By 2000 this had shrunk to just over 10% while onshore white fish processing, which did not take place at Independence, accounted for over 80% of land-based value added. In 1996 on shore processing of deep-water fish accounted for almost a quarter of all value added but this was not sustained. On shore processing of mid-water species has never risen above 1% of all on shore value added. These trends are presented graphically in Chart 16.

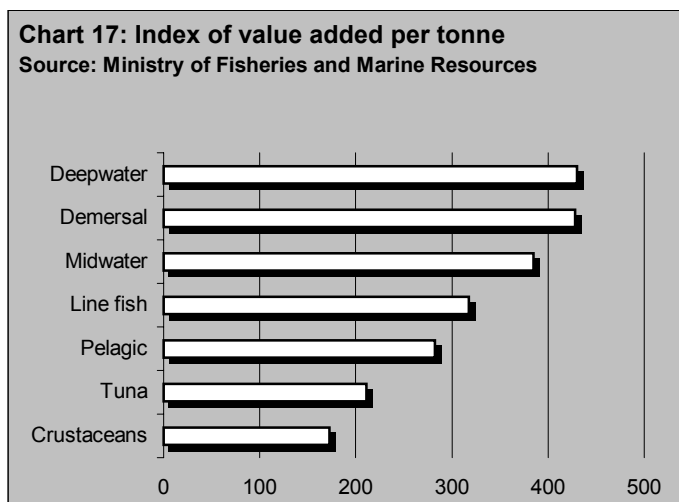
## Deep-water and white fish have been most successful at increasing value added per tonne...

The statistics from the MFMR also allow a calculation to be made of how much income is derived from a tonne of fish from each species. The total value added from each sub-sector is divided by the total number of tonnes of fish caught. This represents the value added per tonne of fish





landed. An index is then calculated by dividing the result for 2000 by the equivalent result for 1990 and multiplying by 100. Ranking these indexes from highest to lowest in Chart 17 shows that the deep-water and demersal sub-sectors have been most successful at maximising the amount of value added obtained from a tonne of fish. Rather surprisingly given the lack of sophisticated processing, the mid-water sub-sector comes third but this appears to have come about through a dramatic doubling in price per tonne in 1996. Pelagic fish, tuna and crustaceans seem to have been least successful at increasing value added per tonne.



### ..while workers in the mid-water fishery remains largely foreign.

Earlier it was shown that the fishing industry had undergone a reasonably successful process of Namibianisation. Again, however, average figures for the industry as a whole hide important differences in performance. Table 2 shows how Namibianisation has progressed in the different parts of the fishing fleet.

**Table 2: Namibianisation of employment on board fishing vessels**

	1994	1995	1996	1997	1998	1999
Pelagic	89%	94%	95%	97%	96%	97%
Total	493	445	476	427	562	395
Demersal	65%	72%	73%	81%	84%	79%
Total	1,967	2,427	3,016	2,649	2,212	2,506
Midwater	1%	1%	5%	8%	6%	9%
Total	2,664	2,409	2,141	2,100	1,606	1,531
Linefish	93%	95%	99%	100%	100%	84%
Total	268	342	294	277	316	310
Crab	57%	46%	53%	64%	65%	71%
Total	190	147	118	73	101	76
Rock lobster	99%	99%	99%	100%	100%	99%
Total	550	674	541	525	429	439
Deep water	N/a	N/a	N/a	70%	78%	72%
Total	N/a	N/a	N/a	261	139	156
Tuna	31%	33%	65%	63%	76%	65%
Total	1,112	1,356	940	957	1,218	1,205
Industry	42%	47%	57%	60%	66%	63%
Total	7,244	7,800	7,526	7,269	6,583	6,618

It shows that some parts of the fishing fleet have been largely Namibian for some time while others have increased the proportion of Namibians employed over time. The exception to this is the mid-water fleet which in 1999 employed only 9% Namibians out of a total of more than 1,500 employees. Many of the remaining foreign held posts are likely to be in positions requiring higher

skills. These are likely to take more time to Namibianise and therefore increasing Namibianisation to levels higher than 90% is likely to prove harder and take longer.

## Revenues from quota fees have declined...

Since the early 1990s the Government has consciously structured the duration of fishing rights and the level of quota fees to encourage Namibianisation and the processing of fish caught in Namibian waters on land. At the beginning of each fishing season, quota holders must pay a quota fee for every tonne of fish they are allocated that year. For several species, quota fees are lower if the fish are caught by Namibian-based or Namibian vessels and also if they are brought ashore for processing. Quota fees have provided a significant source of revenue for the Government from the fishing industry in addition to normal corporation tax. As demonstrated above, this policy has achieved striking success in the white fish industry. It has met with less success in the mid-water fishery, where on shore drying of horse mackerel remains a relatively small operation. However, the very success of the policy in the demersal fishery has led to a decline in total revenues from quota fees.

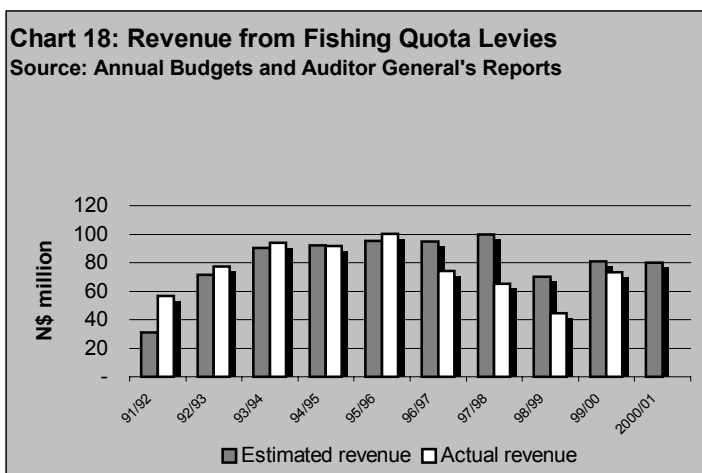


Chart 18 shows that revenues started to decline sharply as the demersal industry accelerated its move ashore. Interestingly, figures taken from the Reports of the Auditor General between 1990/91 and 1997/98 and from subsequent Budgets show that, since 1996/97, revenue estimates have consistently overestimated the actual revenues collected. As a proportion of overall tax revenues, quota fees have declined from a peak of almost 5% in 1993/94 to little more than 1% in 1999/2000.

## ...and there appear to be no satisfactory public financial statements for the Sea Fisheries Fund.

**Table 3: Sea Fisheries Fund Revenue by fishery**

	1993	1994	1995	1996	1997	1998
Pilchard	4,100,840	3,201,206	1,986,230	1,076,301	1,764,669	2,229,574
Horse mackerel	3,876,778	3,116,097	2,539,690	2,405,362	2,232,582	2,978,521
Hake	1,881,340	2,235,488	2,547,627	2,509,499	2,174,928	2,878,376
Linefish	12,813	11,651	12,407	9,314	10,037	11,933
Rock lobster	15,784	16,725	24,761	31,396	30,134	43,789
Tuna	3,093	3,870	65,850	N/a	N/a	N/a
Crab	0	0	50,202	42,725	36,955	43,109
Other	N/a	N/a	N/a	10,667	2,021,185	1,670,079
<b>Total</b>	<b>9,890,648</b>	<b>8,585,037</b>	<b>7,226,767</b>	<b>6,085,264</b>	<b>8,270,490</b>	<b>9,855,381</b>

Under the Sea Fisheries Act 1992, an additional levy is imposed on the fishing industry which accrues to the Sea Fisheries Fund rather than Central Government's account, the State Revenue Fund. The stated purpose of this fund is to finance fisheries research. Levies are charged in

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Namibia dollars per tonne and vary depending on species and product. Table 3 shows the total contributions to the Fund by fishery. No figures were included in the latest Fisheries Statistical Report of 1999. The Auditor General is responsible for auditing the Fund but has consistently been unable to provide a satisfactory opinion on its financial statements. In his most recent Report for 1997/98, the Auditor General concludes that “the Ministry failed to maintain proper financial records and therefore could not compile the financial statements”. It is beyond the scope of this short paper to assess the extent to which the Fund has been effective in financing fisheries research.

### **Future growth cannot rely on growth in catches or Namibianisation.**

This briefing paper has examined the performance of Namibia’s fishing sector since Independence. It has shown that the dynamism exhibited by the sector as a whole can be mostly explained by the success of the white fish industry, mainly hake, which, by many of the most important measures, now dominates Namibia’s fishing sector. Other parts of the industry have not fared particularly well. The performances of the hitherto dominant pelagic and the new deep-water industries have disappointed because of little understood changes in the fish resources themselves.

Growth in catches and growth in employment through Namibianisation are likely to be more limited in future since demersal and mid-water catches are approaching their maximum sustainable yields and there is less and less to Namibianise. Vessels are now 80% Namibian or Namibian registered while crews are 65% Namibian. The mid-water fleet remains an important exception to this trend. Indeed, it is interesting to contrast the performance of the white fish sector with that of the mid-water sector generally. Further research is required to explain this curious difference in performance and why horse mackerel, which might be thought to represent a great national resource, remains so underutilised. Overall, future growth in the industry will have to depend on product and market development, more fishing outside Namibian waters by the Namibian fleet, and processing more fish in Namibia that is caught by non-Namibian vessels elsewhere.

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