ANNEX 1

Country reviews

Australia (Pacific Coast)

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INTRODUCTION

The Pacific coast of Australia, for the purposes of this review, includes the fishing areas off the coasts of Queensland (including Torres Strait), New South Wales, Victoria, Tasmania and South Australia. Other areas of Australia (particularly those bordering the Indian Ocean) are reported on separately.

Although the Pacific coast of Australia represents a large fishing area, production is limited by the lack of extensive, nutrient-rich upwelling and the generally narrow continental shelf. However, while production volume is limited, the value of that production is significant because of the predominance of high value species such as lobster, shrimp, abalone etc.

Fisheries management in Australia is a shared responsibility between the National Government and the various State Governments with various arrangements in place to ensure a consistent approach across all jurisdictions. States, in general, have responsibility for management of fisheries within their territorial waters[1] (this includes specific responsibility for recreational fisheries) with the National Government having management responsibility for fisheries that are beyond those limits. In cases where fisheries exist across both jurisdictions, the provisions of the Offshore Constitutional Settlement (OCS) are invoked where management arrangements are agreed upon between the National and State Governments. This often includes delegation of legislative powers to the States or National Government to ensure the fishery is managed as a single entity.

In general, the management of fisheries in Australia is very highly developed and is characterized by a highly collaborative approach between Government and Industry. All major fisheries are limited entry in nature although entry entitlements to these fisheries are generally freely tradable. In recent years, two significant rends have emerged. Firstly, the move to a 'user pays' system where participants in each fishery are increasingly responsible for funding management, research and compliance costs that support the fishery. Secondly, the broadening of management objectives away from a 'single-species' approach to include more general ecosystem management issues. This second trend has been driven by Australia's more general commitment to the principals of ecological sustainable development (ESD).

POLICY FRAMEWORK

Being a confederation of States, both legislative and policy frameworks for fisheries management reside at both national and at state levels with various co-ordination mechanisms being in place to ensure that general fisheries management policy issues are consistent between national and State authorities. Specific fisheries management objectives are set out at the national level in the Fisheries Administration Act (1991) and the Fisheries Management Act (1991) while the fisheries objectives of Torres Strait are contained in the Torres Strait Fisheries Act (1984). At the State level, Queensland,

[1] This generally includes waters to 3 nm offshore but also includes specific water bodies that are regarded as 'internal' waters, such as embayments and Gulfs.

New South Wales, Tasmania and South Australia all have State legislation that reflect similar management objectives and which apply to those fisheries that are managed by the respective States. These are generally fisheries that lie within three nautical miles of the coast of the State. In cases where fisheries cross borders between states and national jurisdiction, the provisions of the Offshore Constitutional Settlement (OCS) arrangements apply. These arrangements provide for consistent management of cross-jurisdictional fisheries.

The policy framework for fisheries in the Pacific area of Australia rests on four major principles. These are (1) limited entry commercial fisheries[2], (2) an increasing trend towards ecosystem management rather than single-species management, (3) a move towards 'cost-recovery' where the full costs of management, monitoring control and surveillance (MCS) and research services in support of the fishery is paid for through license fees[3], and (4) a collaborative approach to management where Government, industry and other stakeholders are formally and intimately involved in policy development. For fisheries that cross State borders (e.g. the rock lobster fishery of South Australia, Victoria and Tasmania), the management arrangements tend to be handled independently by the various states within their area of jurisdiction with mostly informal (if any) co-ordination in management policy. This can, and does, lead to some inconsistencies in management arrangements (e.g. different size limits etc.) between states.

At the national level, fisheries legislation is reviewed on an annual basis[4] while State legislation is reviewed on a regular (often five year) basis. At these reviews, international mandates etc. are considered for incorporation into national and State legislation. Following Australia's ratification of the UN Fish Stock Agreement in 1999, implementing national legislation came into force in 2001. Australia is currently in the process of accepting the FAO Compliance Agreement, the binding element of the FAO Code of Conduct for Responsible Fisheries and expects to deposit the Instrument of Acceptance in 2004 upon the passage of relevant national legislation. In general, all fisheries management policies in place in Australia at the national and State level incorporate the essential elements of the Code of Conduct for Responsible Fisheries.

As part of the trend towards incorporating a more ecosystem-based approach into its fisheries (and other natural resources) management arrangements, the Australian government has adopted a framework for ensuring that fisheries are conducted within the provisions of Ecological Sustainable Development criteria. This framework uses environmental controls (including trade and export controls) of the *Environment Protection and Biodiversity Conservation Act (1999)* to ensure that fisheries are managed for long-term ecological sustainability.

LEGAL FRAMEWORK

At the national level, the organization responsible for fisheries management and compliance is the Australian Fisheries Management Authority (AFMA). At the State level, the various State Fisheries Ministries or Departments are responsible for these

[2] The limited entry nature of major commercial fisheries (whether managed at the National or the State level) has resulted in not only good control over fishing capacity but also profitable and generally stable fisheries. This in turn has lead to increasing values for the access right (i.e. licenses, which are freely tradable) to these limited entry fisheries to the point where access rights to some major fisheries, such as the northern prawn fishery, has reached levels in excess of $1 million. Recreational and indigenous fisheries are not subject to limited entry regimes.

[3] These services are invariably supplied by Government and hence a competitive market in service provision does not currently exist.

[4] These reviews more often result in amendments to existing legislation rather than a complete re-drafting of legislation. For example, the last major re-drafting of national fisheries management legislation was in 1991 although, during that time, there have been numerous amendments to enact changes in management policy, including international fisheries mandates.

functions for fisheries that come under State jurisdiction (usually those fisheries that lie within 3 nm of the coast). Fisheries that lie in both State and national jurisdiction are managed under Offshore Constitutional Settlement (OCS) arrangements, which are essentially agreements between the States and the national government on management arrangements. In 2003, there were around 50 fisheries that are managed under OCS arrangements. In the Pacific coast area, two Joint Authorities also exist to formalize management arrangements for specific areas and/or fisheries. These are the Torres Strait Protected Zone Joint Authority and the Queensland Fisheries joint Authority.

The most important pieces of fisheries legislation at the national level are the *Fisheries Administration Act (1991)* and the *Fisheries Management Act (1991)* while the fisheries objectives of Torres Strait are contained in the *Torres Strait Fisheries Act (1984)*. At the State level, Queensland, New South Wales, Tasmania and South Australia all have State legislation that provide the legal framework for management and administration of fisheries within each State's jurisdiction.

Although the jurisdiction for fisheries management is shared between national and State authorities, there are legislative requirements in place that require co-ordination in management. In addition, the management approach, being participatory, also involves a wide range of stakeholder groups, including other Government ministries, fishermen, indigenous groups, community and environmental lobby groups etc. As a result, a range of other legislation, codes of conduct and opinions impact on fisheries management outcomes. At the legislative level, these include issues relating to quarantine, crimes at sea, transport, telecommunications, marine safety, endangered species and ecological protection.

STATUS OF THE FISHERIES

In 2000-01, the total fish catch from the Pacific areas of Australia was 193 550 tonnes of a total Australian (Pacific plus Indian Oceans) catch of 229 840 tonnes (ABARE, 2002), a figure that has remained static since 1995/96. Although this production was valued in excess of $1.3 billion, it represents less than 0.3 percent of Australia's GDP. The high value species of lobster, shrimp and abalone dominate the sector, contributing around 50 percent of value but only around 23 percent of volume. Fisheries in the area are reaching full production for all the known finfish, crustaceans and mollusk resources. Some serious stock depletion has occurred in wild caught southern bluefin tuna, gemfish and shark species although these have been, or are, being addressed through appropriate recovery strategies[5].

Within the Pacific Coast area, the three largest fisheries by volume, of a total of more than 90, are the South East trawl fishery (SETF), the Northern Prawn Fishery (NPF) and the Eastern Tuna and Billfish fishery (ETBF).

Other fisheries in the area, particularly the abalone fishery of Tasmania, Victoria, South Australia and New South Wales and the rock lobster fisheries of Tasmania, Victoria and South Australia, while small in volume, are major contributors to the value of production because of the high unit price of the species caught. Table (a) of the Appendix provides production data for the period 1998/99-2000/01 for all fisheries of the area.

Because of strict management controls and limitation of access, most fisheries remain very profitable. Almost all fisheries now operate under a limited access arrangement although access licenses are usually freely tradable. This arrangement has lead to significant increases in access license values, resulting in a concentration of ownership of access rights and economic barriers to new entrants.

[5] Recovery strategies form part of the management plans for each fishery and include specific biological indicators and reference point targets.

TABLE 1
Basic data on fisheries

Category of Fishery	Fishery	Volume Tonnes[1]	Value[2] USD million	% of Total Volume Caught	% of Total Value Caught	Covered by a Management Plan?	# of Participants	# of Vessels
Industrial	SETF	30 020	45	15.6	7.0	Yes	100	106
	ETBF	8 366	45.3	4.3	7.3	No	224	155
	NPF	5 610	55	2.9	8.9	Yes	55	94
Indigenous/ artisanal	1. Saltwater prawn (shrimp)	131 158	n/a	18.6	n/a	No	Est. 12 000	Nil
	2. Pipi or cockles (marine bivalves)	71 607	n/a	10.1	n/a	No	Included in 1	Nil
	3. Small baitfish	71 012	n/a	10.0	n/a	No	Included in 1	Nil
Recreational	1. Flathead	2945	n/a	15.9	n/a	No	2.786 mil.	n/a
	2. Whiting	1804	n/a	9.7	n/a	No	Included in 1	n/a
	3. Bream	1760	n/a	9.4	n/a	No	Included in 1	n/a

Notes: n/a = not available
1. Volume in tonnes except for indigenous fisheries where volume is in numbers. No weight data are available for indigenous fisheries. Volume for recreational fisheries has been estimated in tonnes from data originally collected in numbers.
2. Value in 2002 U.S. Dollars.

Annual reporting to Parliament of the status of exploited fish stocks is a legislative requirement at both the national and State levels[6]. In 2003, there were 16 nationally-managed fish stocks that were considered over-exploited, 16 that were fully utilized, 4 underfished and 34 (all minor species) of uncertain status. There is a legislative requirement for managers to address over-exploited stocks[7] and to implement recovery strategies and this is being done for all stocks considered overexploited. In recent years, 3 stocks have been removed from the overexploited category at the national level as stock-rebuilding strategies are implemented and further stocks are showing signs of recovery.

The characteristics of the three largest commercial, indigenous and recreational fisheries in the Pacific area of Australia in 2001/02 are as follows (Table 1). Fisheries are South East Trawl Fishery (SETF), the Eastern Tuna and Billfish Fishery (ETBF) and the Northern Prawn Fishery (NPF). All of these fisheries are managed at the national level[8].

MANAGEMENT ACTIVITY

Australia has a well-developed system of fisheries management and all major (and most minor) fisheries are under formal management arrangements. The development of fisheries policy is undertaken by the Department of Agriculture, Fisheries and Forestry at the national level and by State Fisheries ministries or departments at the State level. The process of policy development is a participatory one and involves all stakeholders (including other Government bodies, fishermen, interest groups etc) through formal consultation processes and by making draft management plans available for general public scrutiny and comment prior to implementation. The implementation of fisheries management measures is undertaken by the Australian Fisheries management Authority (AFMA) at the national level and by State Fisheries Ministries and departments at the State level. For stocks that cross national and State jurisdictions, Offshore Constitutional Settlement arrangements are in place to provide

[6] Such reporting is done either through annual reports of the activities of the management agency or through specific State of the Fisheries reports.
[7] Recovery strategies are incorporated into the management plans for specific fisheries.
[8] This is quite different from the situation in the Indian Ocean area of Australia where the three major fisheries are managed at the State level and, accordingly, national Government involvement in fisheries management is not as great as in the Pacific area.

consistent policy formulation and implementation of management measures across all jurisdictions.

Formal management arrangements exist at either the national or State level for all exploited species (some 120 species in total), although not all these species have formal management plans. The number of stocks under management has increased over the past ten years as commercial interest is shown in a wider array of species and as management processes extend to species of minor commercial or recreational interest. All managed stocks undergo formal and regular assessment to determine their status while management plans also incorporate a regular (usually each 5 years) and exhaustive review process.

Recreational fisheries are important in the Pacific area of Australia and a national survey[9] undertaken in 2000/01 showed that, within the Pacific States (as defined here) of New South Wales, Victoria, Queensland, Tasmania and South Australia, approximately 2.786 million people undertook marine recreational activities during the study period. This represents between 20 percent and 33 percent of the total population, depending on the State. New South Wales had the largest number of recreational fishers with 999 000, followed by Queensland with 785 000.

Recreational fisheries management in Australia is the responsibility of the States and therefore, management regulations differ between States. In Victoria and New South Wales, marine recreational anglers require a license while in the other States, these are not required[10]. In addition, size limits, daily bag and boat limits and regulations on charter boat operators differ between States.

Although the national recreational survey showed that the largest recreational fishery in terms of numbers caught was the prawn (shrimp) fishery[11] with 17.8 million individuals taken[12], the coastal marine fish of flathead (*Platycephelus* spp.), whiting (*Sillago* spp.) and bream were the most important in terms of total weight. These three species accounted for around 15.9 percent, 9.7 percent and 9.5 percent respectively of a total estimated marine recreational catch of 18 600 tonnes per annum.

Each State has formal consultative mechanisms for the recreational sector to policy development, usually through specific recreational advisory committees that provide advice directly to the Minister.

Within the Pacific area of Australia, marine indigenous fisheries are mainly confined to the northern areas of Queensland with marine shrimp, bivalves and baitfish being the largest components of the marine indigenous fisheries by number[13]. Approximately 12 000 persons were involved in the capture of these species. Indigenous fisheries are not subject to limited entry regimes and are only lightly regulated, if at all.

Indigenous participation in the development of management policy for marine fisheries and in participating in management bodies varies between the States and between State and National Government organizations. At the national level, there is no Aboriginal or Torres Strait Islander members on Management Advisory Committees established by the Australian Fisheries Management Authority, other than in the

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[9] Undertaken by the Bureau of Resource Sciences

[10] Although a general marine angling license is not required, specific licenses to take species such as rock lobster, abalone and scallops are in place in these States. These species-specific licenses include specific regulations such as bag and boat limits, seasons and size limits. In South Australia, the number of recreational rock lobster licenses available is limited each year (so as to achieve a resource allocation between professional and recreational users) with the annual allocation being based on a 'first-in' basis. Demand for such recreational rock lobster licenses far exceeds the annual allocation.

[11] The recreational prawn fishery is based mainly in the estuaries of northern New South Wales and Queensland

[12] Estimated at around 743 t.

[13] In a survey of indigenous fisheries undertaken by the Bureau of Resource Sciences in 2000/01, the numbers (but not weight) of catches were recorded.

Torres Strait, although Aboriginal people may attend shrimp fishery management advisory meetings. In the Torres Strait, the advisory and consultative structure is extensive and an important development in that region has been the finalization of several community-level environment and resource management plans.

The Great Barrier Reef Marine Park Authority has significant Aboriginal and Torres Strait Islander involvement in advisory committees and reef management processes. The Australian Nature Conservation Agency is developing innovative proposals to encourage the customary management of some Aboriginal and Torres Strait Islander land and sea areas, and marine protection strategies are also being developed for the Arafura Sea and the Torres Strait under the Ocean Rescue 2000 program.

At the State level, there is no statutory requirement for Aboriginal participation in fisheries management in Tasmania, New South Wales or South Australia. In Victoria, the State *Fisheries Act 1995* acknowledges indigenous interests in fisheries to the extent that the membership of the Fisheries Co-Management Council[14] must specifically include a member with knowledge and experience in 'traditional fishing'. Fishery committees that are specific to the management of particular fisheries are also established under the Victorian legislation, and *may* include members with expertise on traditional fishing.

Management tools in use are fishery-specific and, apart from a prohibition on the use of drift nets (legislated as part of the *Fisheries Management Act 1991*); there are no other blanket restrictions on the use of any management tool or fishing gear.

Over the past ten years however, there has been a trend towards the use of output controls in commercial fisheries in preference to the still commonly used input controls. In particular, individual transferable quotas (ITQs) are being increasingly used as a management tool to enhance the sense of ownership of access rights among operators and also to encourage economic efficiency.

Fisheries management is also moving very clearly towards ESD principles where ecosystem effects of fishing are increasingly being addressed as part of fisheries management plans and planning. This process is being driven by national environmental legislation that requires management processes that will ensure ecological sustainability of fisheries. As a result, issues such as ecosystem impacts of fishing activities, bycatch assessment and minimization and marine conservation (often through Marine Protected Areas) are an increasingly important component of fisheries management processes and policies.

With these broader policy issues in fisheries management, and with the need to address an increasing number of (often minor) fisheries, the major obstacle to more effective management in the future is limitation of resources to address, and to ensure compliance with, management measures. Compliance costs in particular are increasing rapidly, particularly as Australia addresses remote fisheries (e.g. Patagonian toothfish) in its Southern Ocean territories. In addition, there is often insufficient scientific knowledge of the ecosystem implications of fisheries to support ecosystem-based management processes. Australia is addressing the resources issue through a variety of means, including moving to a 'user-pays' system of management where the owners of the access rights to fisheries are required to pay an increasing share of the costs of management, research and compliance for some fisheries.

COSTS AND REVENUES OF FISHERIES MANAGEMENT

Costs of fisheries management activities are incurred by the management agency that has jurisdiction over a particular fishery with, increasingly, those costs[15] being fully

[14] The Fisheries Co-Management Council is the main consultative body for the development of fisheries policy in Victoria. Membership of the Council is established by legislation and is required to reflect a range of expertise in fisheries issues, including indigenous, recreational and commercial interests.

[15] Usually including Government overhead costs and not only direct costs.

recovered by the management agency through annual license fees. Likewise, revenues from licensing accrue to the management agency to fully fund the management, MCS and research services that are provided to the fishery[16]. In fisheries where cost recovery principles are not fully implemented (including all recreational and indigenous fisheries), the management agency funds the required services from annual budget allocations from the central national or State Government.

Total costs of fisheries management, compliance and research has increased significantly over the past ten years and, in 2000, was $AU148.1 million, or approximately $US104 million (OECD, 2003). This total cost consisted of $AU74 million (50 percent) for research services, $AU26.3 million (18 percent) for management services and policy development and $AU47.8 million (32 percent) for enforcement.

Compliance costs to deter illegal foreign fishing in Australia's northern waters have increased dramatically in the past ten years because of an increase in the number of vessels fishing illegally and an increase in detention and security costs. In 1998, the Australian Fisheries Management Authority (AFMA) began incurring costs to deter illegal fishing in Antarctic waters although in 2003, the Australian Customs Service took over the significant costs of providing patrol vessels for this area.

Domestic fisheries management costs have increased by about 40 percent over the past ten years due to increases in research and observer costs as well as costs of meeting new environmental legislation such as the provisions of the *Environment Protection and Biodiversity Conservation Act (1999).*

Apart from specific funding from the Australian government in 1998 to address illegal foreign fishing in sub-Antarctic waters, Government funding for fisheries management at both the national and at the State level has remained more or less static over the past ten years. Therefore, to meet the increasing costs of management, operators in the fishing industry have contributed an increasing share of management costs during the past ten years under the Government's 'user-pays' arrangements. Revenues from the fishing industry to meet management, research and compliance costs have more than doubled over the past ten years with these charges being collected through increased license fees. In 2000, the industry contributed around 22 percent of total research, management and enforcement costs, including 41 percent of direct management costs (OECD, 2003).

IMPLEMENTATION OF GLOBAL FISHERIES MANDATES AND INITIATIVES

Australia ratified the UN Convention on the Law of the Sea (UNCLOS) in 1982 and the UN Fish Stocks Agreement in 1999. In addition, Australia is in the process of ratifying the UN Compliance Agreement and this process is expected to be completed during 2003 after passage of relevant domestic legislation.

The objectives of UNCLOS and the UN Fish Stocks Agreement have been incorporated into national legislation as part of the national *Fisheries Management Act 1991* and are implemented, at both national and State levels, through formal Management Plans for each fishery. The obligations embodied in the FAO Compliance Agreement are in the process of being incorporated into the *Fisheries Management Act (1991)* and the *Fisheries Administration Act (1991).*

The implementation of the provisions of International Plans of Action related to managing fishing capacity, IUU fishing, shark management and seabird by-catch in

[16] At the present time, Government agencies provide most management, MCS and research services to fisheries where cost recovery principles are applied. Therefore, there has yet to be competitive markets develop for the provision of those services that might be outsourced to the private sector. There is generally no legislative restriction on outsourcing services although the Government, for strategic reasons, often prefers to retain a role in the provision of MCS and other key services. Some administrative (e.g. quota monitoring, Committee administrative support functions) and research services are outsourced to the private sector but the value of such services is currently small.

longline fisheries has been, or is in the process of being, undertaken in appropriate fisheries. This is achieved by developing domestic legislation to address these provisions through the preparation of National Plans of Action. It is a legislated requirement (referred to as 'Strategic Assessment') that these National Plans of Action, when finalized, be incorporated into fisheries-specific Management Plans.

PARTICIPATION IN REGIONAL FISHERY BODIES

Australia is an active member of a number of Regional Fisheries Bodies, primarily related to issues in the Indo-Pacific area. These include APFIC, IOTC, the APEC Fisheries Working Group, FFA, SPC, CCAMLR and CCSBT. Australia has also signed and ratified WCPFC.[17]

Measures that are adopted by these Regional Fisheries Bodies are usually incorporated into national legislation, particularly the *Fisheries Management Act (1991)* or are incorporated directly into specific Fisheries Management Plans. There is no legal requirement for ***all*** measures that are adopted by regional Fisheries Bodies to be incorporated into national legislation and each issue is considered from a national perspective, after consultation with stakeholders.

SUMMARY AND CONCLUSIONS

The Pacific area of Australia includes major fisheries for shrimp and lobster as well as tuna and demersal trawl fisheries. Unlike the Indian Ocean area of Australia, many of the more important fisheries are managed at the national level rather than the State level, although State management is important for many of the smaller inshore fisheries, including high value species of abalone, rock lobster and shrimp[18].

Australia generally has a well-developed, participatory system of fisheries management based on the general principles of Ecological Sustainable Development. This management system is supported by an extensive and highly developed research capability[19] as well as a dedicated and effective MCS system at both the State and national level. As a result, almost all fisheries have well defined management plans and are being managed for long-term sustainability. In the few instances where over-exploitation has occurred, monitored recovery strategies have been put in place. In addition, because most commercial fisheries are managed on a limited entry basis, over-capacity is not a significant issue in most fisheries. As a result, the major fisheries are often highly profitable. This arrangement has lead to significant increases in the value of the tradable access rights to these fisheries, resulting in a concentration of ownership and economic barriers to new entrants. This has resulted, in several major fisheries, to a significant reduction in the number of operators (within a limited entry management environment) and therefore an increase in the concentration of ownership of access rights.

The approach taken by management authorities in Australia is a collaborative and participatory one, involving all stakeholders in policy development and implementation and this has generally lead to broad acceptance of management measures. There has

[17] Asia-Pacific Fishery Commission, Indian Ocean Tuna Commission, Asia-Pacific Economic Cooperation, Forum Fisheries Agency, South Pacific Commission, Commission for the Conservation of Antarctic Marine Resources, Commission for the Conservation of Southern Bluefin Tuna, and Western and Central Pacific Fisheries Commission.

[18] Although the major shrimp fishery of the northern prawn fishery (NPF) is managed at the national level, there are other major shrimp fisheries, particularly in South Australia, that are managed at the State level

[19] Specific fisheries Research Institutes are located in each State to support State managed fisheries as well as national research organisations, such as the Commonwealth Scientific and Industrial Research Organisation, CSIRO that generally supports nationally managed fisheries. Research capabilities include economic and social issues as well as biological, ecosystem and stock assessment disciplines.

been a discernible shift in management approach over the past ten years towards managing outputs rather than inputs. This is often done through individual transferable quotas (ITQs) which have generally been successful in leading to economic efficiency and in increasing quota asset values.

With the move to broaden fisheries policy objectives to a more ecosystem-based approach, the costs of fisheries management and supporting services of research and enforcement are increasing rapidly. With Government funding for fisheries management remaining more or less static over the past ten years, the participants in the (mostly limited entry) fisheries are meeting an ever-increasing share of the total management and supporting costs through a 'user-pays' system. These costs are collected through license fees.

Illegal foreign fishing, both in northern Australian waters and in sub-Antarctic areas has increased significantly since 1998 and the cost of providing monitoring and surveillance in these often-remote areas has increased dramatically. Being an active member of various Regional Fisheries Bodies, Australia is also addressing this illegal foreign fishing through these regional forums.

Continued and improved fisheries management within the broader requirements of ecological sustainable development (ESD) is the key objective for the Australian fishing industry. The challenge may well be to achieve this objective in a way that minimizes the concentration of access rights to a small number of fishers.

REFERENCES

ABARE. 2002. *Australian fisheries statistics, 2001*. Australian Bureau of Agricultural and Resource Economics Canberra, 64pp. ISSN 1037-6879.

OECD. 2003. *The costs of managing fisheries.* Organization for Economic Co-operation and Development, 173pp. ISBN 92-64-09975-1.

APPENDIX TABLES

Pacific Coast Area of Australia Wild Capture Fisheries Production (tonnes) and Value (2002 $US) for the Period 1998/99-2000/01

	Managed at State or national Level?	1998/99	1999/2000	2000/01
Fish:				
Tuna	National and state	16713 t	21287 t	16076 t
Other	National and state	107518 t	98476 t	100497 t
Total fish value		$US459 million	$US508 million	$US525 million
Crustaceans:				
Shrimp (prawns)	National and state	26586 t	22058 t	26576 t
Rock lobster	Mostly state	5970 t	5822 t	5562 t
Crab	Mostly state	4447 t	5078 t	5547 t
Other	National and state	571 t	583 t	630 t
Total crustacean value		$US397 million	$US394 million	$US456 million
Molluscs:				
Abalone	State	5300 t	5236 t	5343 t
Scallops	National and state	9175 t	8780 t	5793 t
Squid	National and state	3601 t	2627 t	4205 t
Other	National and state	4409 t	4442 t	4954 t
Total mollusc value		$US148 million	$US178 million	$US219 million
Total production		**184290 t**	**174389 t**	**175183 t**
Total Value		**$US1 004 million**	**$US1 080 million**	**$US1 200 million**

Current Management of Marine Capture Fisheries

Level of Management	% Fisheries Managed	% with Fisheries Management Plan	% with Published Regulations[1]	Trends in the number of Managed Fisheries over ten yrs. (increasing/decreasing/unchanged)
National	> 67	> 67	> 67	Increasing
Regional	> 67	> 67	> 67	Increasing
Local	n.a.	n.a.	n.a.	n.a.

Notes: n.a. not applicable

1. In other cases of managed fisheries where no regulations have been published, licenses with conditions/rules are issued to participants under the Fisheries Acts at either national or State level.

Use of Fishery Management Tools within the three largest fisheries

Category of Fishery	Fishery	Restrictions				License/ Limited Entry	Catch Restrictions	Rights-based Regulations	Taxes/ Royalties	Performance Standards
		Spatial	Temporal	Gear	Size					
Industrial	SE Trawl	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes
	East Coast Tuna and billfish	Yes	No	Yes	No	Yes	Yes	No	No	Yes
	Northern Prawn	Yes	Yes	Yes	No	Yes	No	No	No	Yes
Indigenous /Artisanal	Saltwater prawn (shrimp)	No	No	No	No	No	No	No	No	No
	Marine bivalves	No	No	No	No	No	No	No	No	No
	Small baitfish	No	No	No	No	No	No	No	No	No
Recreational[1]	Flathead	No	No	Yes	Yes	Yes[2]	Yes	No	No	No
	Whiting	No	No	Yes	Yes	Yes[2]	Yes	No	No	No
	Bream	No	No	Yes	Yes	Yes[2]	Yes	No	No	No

Notes:

1. Recreational fisheries are managed at the State level and therefore specific management measures may vary between States
2. Recreational licenses for marine angling are only required in Victoria and New South Wales

Costs and Funding Sources of Fisheries Management within the three largest fisheries

Category of Fishery	Fishery	Do Management Funding Outlays Cover			Are Management Funding Sources From		
		R&D	Monitoring & Enforcement	Daily Management	License fees in fishery	License fees from other fisheries	Resource rents
Industrial	SE Trawl	Yes	Yes	Yes	Yes	No	No
	East Coast Tuna and billfish	Yes	Yes	Yes	Yes	No	No
	Northern Prawn	Yes	Yes	Yes	Yes	No	No
Indigenous/ Artisanal[1]	Saltwater prawn (shrimp)	No	No	No	No.	No	No
	Marine bivalves	No	No	No	No.	No	No
	Small baitfish	No	No	No	No.	No	No
Recreational	Flathead	Yes	Yes	Yes	Yes[2]	No	No
	Whiting	Yes	Yes	Yes	Yes[2]	No	No
	Bream	Yes	Yes	Yes	Yes[2]	No	No

Notes:
1. Indigenous fisheries are essentially self-managed and therefore there is minimal expenditure on R&D, monitoring and management. Where there is expenditure on indigenous fisheries issues, funds are derived from national or State Government sources and not from participants in the fisheries.
2. Only for those States where recreational licenses for marine angling are in place.

Compliance and Enforcement within the three largest fisheries

Category of Fishery	Fishery	VMS	On-board observers	Random dockside inspections	Routine inspections at landing sites	At-sea boarding and inspections	Other (please specify)
Industrial	SE Trawl	No	No[1]	Yes	Yes	Yes	n.a
	East Coast Tuna and billfish	No	No[1]	Yes	Yes	Yes	n.a.
	Northern Prawn	Yes	No	Yes	Yes	Yes	n.a.
Indigenous /Artisanal	Saltwater prawn (shrimp)	No	No	No	No	No	No
	Marine bivalves	No	No	No	No	No	No
	Small baitfish	No	No	No	No	No	No
Recreational	Flathead	No	No	Yes	Yes	Yes	No
	Whiting	No	No	Yes	Yes	Yes	No
	Bream	No	No	Yes	Yes	Yes	No

Notes: n.a. = not available
1. May be required to take observer on board. There is no observer programme.

Capacity Management within the three largest fisheries

Category of Fishery	Fishery	Does overfishing exist?	Is fleet capacity measured?	Is CPUE increasing, constant or decreasing?	Have capacity reduction programmes been used?	If used, please specify objectives of capacity reduction programme
Industrial	SE Trawl	No	Yes	Constant or decreasing	No	n.a.
	East Coast Tuna and billfish	No	Yes	Constant or decreasing	No	n.a.
	Northern Prawn	No	Yes	Constant or decreasing	Yes	A buyout of fishing vessels licensed to operate in the fishery
Indigenous /Artisanal	Saltwater prawn (shrimp)	No	No	No data	No	n.a.
	Marine bivalves	No	No	No data	No	n.a.
	Small baitfish	No	No	No data	No	n.a.
Recreational	Flathead	No	Yes[1]	Constant	No	n.a.
	Whiting	No	Yes[1]	Constant	No	n.a.
	Bream	No	Yes[1]	Constant	No	n.a.

Notes: n.a. = not available
1. Measured better in those States that have regular recreational surveys and, particularly, where recreational licenses exist.

New Zealand

Paul Wallis
Ministry of Fisheries, New Zealand
February 2004

INTRODUCTION

This paper reviews New Zealand fisheries and their management, with reference to some of the more important recent changes.

The first section provides an overview of the government objectives for fisheries management in New Zealand. Attention is given to objectives in fisheries legislation and the role of Maori in New Zealand fisheries management. The influence of international norms and mandates is briefly outlined, as is relevant non-fisheries specific law and recent changes to fisheries law.

The second section describes New Zealand's legal framework for fisheries management. The Ministry of Fisheries administers the Fisheries Act 1996, the primary piece of fisheries management legislation. The Ministry is responsible for developing policy frameworks, fisheries information and research, regulatory management, administering access, enforcement and prosecution of offences.

The third section describes New Zealand fisheries. New Zealand has a large maritime jurisdiction and fisheries are an important contributor to the national economy. The seafood industry contributes about US$790 million to the Gross Domestic Product (approximately 1.8 percent of New Zealand's total GDP). Hoki, rock lobster, orange roughy and squid are the most valuable marine capture fisheries.

The fourth section summarises fisheries management processes. It describes how commercial, recreational and Maori customary fisheries are managed and how allocations between these sectors are made. It also trend towards increase use of individual transferable quotas (ITQs) to manage stocks and the establishment of a framework for management of customary fisheries by Maori. Information on the status of stocks is provided, along with thoughts on impediments to more effective management of fisheries resources.

The fifth section describes changes in the cost of managing fisheries. Overall costs have been relatively stable. Over the past decade the Government recovered from commercial fishers the costs of certain fisheries management activities.

The sixth section briefly describes how New Zealand has implemented its duties as a party to the 1982 UN Convention on the Law of the Sea, the 1995 UN Agreement on Straddling Fish Stocks and High Migratory Fish Stocks and other international initiatives. The seventh section describes New Zealand engagement with Regional Fishery Bodies.

Finally, some concluding thoughts are offered on the changes in New Zealand fisheries management over the past ten years and on some of the challenges that lie ahead.

POLICY FRAMEWORK

Government Objectives

The sustainable utilisation of New Zealand's fisheries resources contributes to a range of social, economic and environmental outcomes. The Government's overall goal for fisheries is to "Maximise the value New Zealanders obtain through the sustainable use of fisheries resources and the protection of the aquatic environment."

The Ministry of Fisheries has three strategies that aim at supporting the achievement of this goal:

- Protect the health of the aquatic environment.
- Enable people to get the best value from the sustainable and efficient use of fisheries.
- Ensure the Crown delivers on its obligations to Maori with respect to fisheries.

These three objectives drive the implementation of fisheries management frameworks constructed under the Fisheries Act 1996. The third objective is an obligation the Government is required to meet. The first two objectives are derived from the purpose of the Fisheries Act 1996, which is:

> *(1) The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.*
>
> *(2) In this Act –*
>
> *'Ensuring sustainability' means –*
>
> *Maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and*
>
> *Avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment:*
>
> *'Utilisation' means conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic and cultural wellbeing.*

The purpose presents two outcomes sought when the legislation was enacted. The first outcome, "providing for utilisation" sets out the expectation that access to fisheries resources will be provided and the second outcome, "ensuring sustainability", sets the parameters for utilisation. The Act is intended to facilitate the activity of fishing while having regard to the sustainability of harvests and mitigating the effects of fishing on the environment. Therefore, it deals with fisheries resources that can be harvested and used sustainably either now or in the future.

Ensuring sustainability includes the potential of fisheries resources to meet the reasonably foreseeable needs of future generations. This means ensuring that the renewability of fisheries resources is maintained indefinitely, at a level that provides for continual utilisation. Avoiding, remedying or mitigating adverse effects on the aquatic

BOX 1

The Fisheries Act 1996

Part I. Preliminary Provisions
Part II. Purposes and Principles
Part III. Sustainability Measures
Part IV. Quota Management System
Part V. Foreign Licensed Access
Part VI. Access to Fishery
Part VIA. High Seas Fishing
Part VII. Dispute Resolution
Part VIII. Registration of Transfers, Mortgages, caveats, etc
Part IX. Taiapure-Local Fisheries and Customary Fishing
Part X. Record keeping, Reporting, Disposal of Fish, and Provisions Relating to the Taking and Possession of Fish for Sale
Part XI. Appointment and Powers of Fisheries Officers
Part XII. Observer Programme
Part XIII. Offences and Penalties
Part XIV. Miscellaneous Provisions
Part XVII. Transitional Provisions

environment reflects the need to support a healthy, functioning ecosystem essential for sustainability.

Providing for utilisation revolves around extraction. The purpose of the utilisation outcome is to enable people to provide for their social, economic and cultural well-being. Enabling people to provide for their well-being means provision of access to fisheries, be they customary, recreational or commercial. Opportunities for future extraction are provided for through conservation, enhancement and development. Non-extractive utilisation is indirectly provided for through the sustainable use of fisheries resources and addressing adverse effects on the aquatic environment.

The Fisheries Act 1996 contains 17 parts. These are set out in Box 1. Key elements of some of these parts will be discussed later in this country review.

Maori and Fisheries Management in New Zealand

Maori occupies an important role in the fisheries management framework. The last 10-15 years has seen a significant clarification and settlement of Maori interests in marine capture fisheries. As the indigenous people, Maori held customary fishing rights under British common law. The 1840 Treaty of Waitangi (signed between the British and Maori tribes) guaranteed customary fishing rights, which were both commercial and non-commercial in nature. These rights were exempted from the rules and regulations in fisheries legislation made after the signing of the Treaty. However, the exact nature of Maori customary fishing rights was never defined. As a result, successive governments have been able to legislate to slowly negate Maori fishing rights.[1] Maori fishing rights came to be regarded as little more than a subsistence right to gather seafood for ceremonial occasions.

In 1986 the Government began introducing species into the quota management system (QMS), based on the use of individual transferable quota (ITQ). In 1987, following an application from several Maori leaders, the New Zealand High Court placed an injunction on the Government preventing it from introducing further species into the QMS on the grounds that Maori fishing rights had not been recognised or provided for in the allocation of ITQ.

An interim settlement of Maori fisheries claims was negotiated in 1989. One important effect of the interim settlement on the customary fishing rights of Maori was to affect a split between the commercial and non-commercial components of those rights. The interim settlement provided for 10 percent of all existing ITQ, or its cash equivalent, to be transferred to Maori. A Commission was established to manage that quota and to get Maori into the business and activity of fishing.

In 1992 the Government and Maori reached agreement on the full and final settlement of claims in respect of fisheries. The settlement covers three areas: commercial fisheries, non-commercial fisheries and ongoing involvement of Maori in management of fisheries.

An important part of the commercial fisheries component of the settlement was the Government provision to Maori of NZD 150 million to purchase a half-share of Sealord Products Ltd. The company was the largest commercial fishing company in New Zealand at the time, owning over 20 percent of all ITQ. The settlement also established the Treaty of Waitangi Fisheries Commission (Te Ohu Kai Moana) to manage the commercial settlement assets on behalf of, and to develop a means of their allocation to, Maori. The main ongoing obligation on the Government resulting from the commercial component of the settlement is the requirement to allocate 20 percent of quota to Maori on the introduction of species into the QMS.

[1] Oyster Fisheries Act 1866 banned Maori from commercial oyster fishery. Limited licensing of the commercial fishery from the 1940s assumed Crown ownership of fisheries. Exclusion of part-timers from commercial fishing in early 1980s removed ability of large number of Maori to fish commercially.

Maori non-commercial fishing rights continue to give rise to Treaty obligations on the Government. The Minister of Fisheries is required to consult with *tangata whenua*[2] about, and develop policies to help recognise, the use and management practices of Maori in the exercise of non-commercial fishing rights.

Recent revisions to the Fisheries Act 1996

A number of amendments to the Fisheries Act 1996 were made in 1999. The main legislative changes were as follows:

- Simplifying the QMS catch-balancing regime with the aim of increasing voluntary compliance, including a shift from criminal prosecution to civil penalties as the main disincentive to over-fishing.
- Providing for fisheries management decisions through fisheries plans developed by stakeholders for individual fisheries.
- Enabling responsibility for registry services to be transferred from the Ministry of Fisheries to an outside service organisation.

International Fisheries Norms and Mandates

The Fisheries Act 1996 contains principles reflecting international norms and mandates set out in the Rio Declaration on Environment and Development, the 1995 UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks (1995 UN Agreement) and the FAO Code of Conduct for Responsible Fisheries. People making decisions under the Fisheries Act 1996 are required to take into account certain environmental and information principles. Box 2 sets out those principles.

More recent changes to the legislation reflect New Zealand's obligations are a party to the 1995 UN Agreement. These changes are discussed in detail below.

Non-Fisheries Specific Legislation

New Zealand's main environmental and planning law is the Resource Management Act 1981, which is mainly administered by Regional Councils. The Act applies within New Zealand's territorial seas and aims to promote the sustainable management of natural and physical resources. The purpose is achieved by regulating activities through the preparation of plans, zoning and the requirement to obtain resource consents.

The Marine Reserves Act 1971 provides for the establishment of marine reserves. These reserves are specified areas of the territorial sea, seabed and foreshore managed for scientific study and to preserve the marine habitat in its natural state. They are not used for allocating fishery resources between competing users such as recreational, commercial or Maori interests. So far 18 marine reserves have been established, protecting species in 7 per cent of New Zealand territorial waters, although 99 per cent of this area is in two large reserves around the Kermadec and Auckland Islands.

The Marine Mammals Protection Act 1978 provides for the conservation, protection and management of marine mammals. Similarly, the Wildlife Act 1953 protects certain marine species. These Acts are administered by the Department of Conservation. They do not prevent the accidental (or incidental) take of marine mammals or other wildlife in fishing operations (by-catch). But they do prevent the taking of such species for commercial gain. Protected species include seabirds, marine mammals and corals. Species can be designated as protected not necessarily because they are at risk of serious decline but because a decision has been made that they should not be available for commercial exploitation – even when taken as unintended non-target bycatch. Those protected species that are considered to be at risk of serious decline can be further designated as "threatened". Fishery interactions with threatened species are more

[2] "Tangata whenua", in relation to an area, means the hapu (clan), or iwi (tribe), that is Maori and holds mana whenua (customary authority) over that area.

BOX 2
Fisheries Act 1996 Environmental and Information Principles

Environmental Principles:

- Associated or dependent species should be maintained above a level that ensures their long-term viability:
- Biological diversity of the aquatic environment should be maintained:
- Habitat of particular significance for fisheries management should be protected.

Information Principles:

- Decisions should be based on the best available information:
- Decision makers should consider any uncertainty in the information available in any case:
- Decision makers should be cautious when information is uncertain, unreliable, or inadequate:
- The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

strictly managed. The Fisheries Act 1996 requires the Minister of Fisheries to take necessary measures to avoid, remedy and mitigate the effect of fishing-related mortality of any protected species.

LEGAL FRAMEWORK

There are three tiers of government in New Zealand: central, regional and local. Fisheries management is the preserve of central government and the Ministry of Fisheries administers the Fisheries Act 1996. The Ministry employs around 340 people in offices around New Zealand (the head office is in New Zealand's capital city – Wellington).

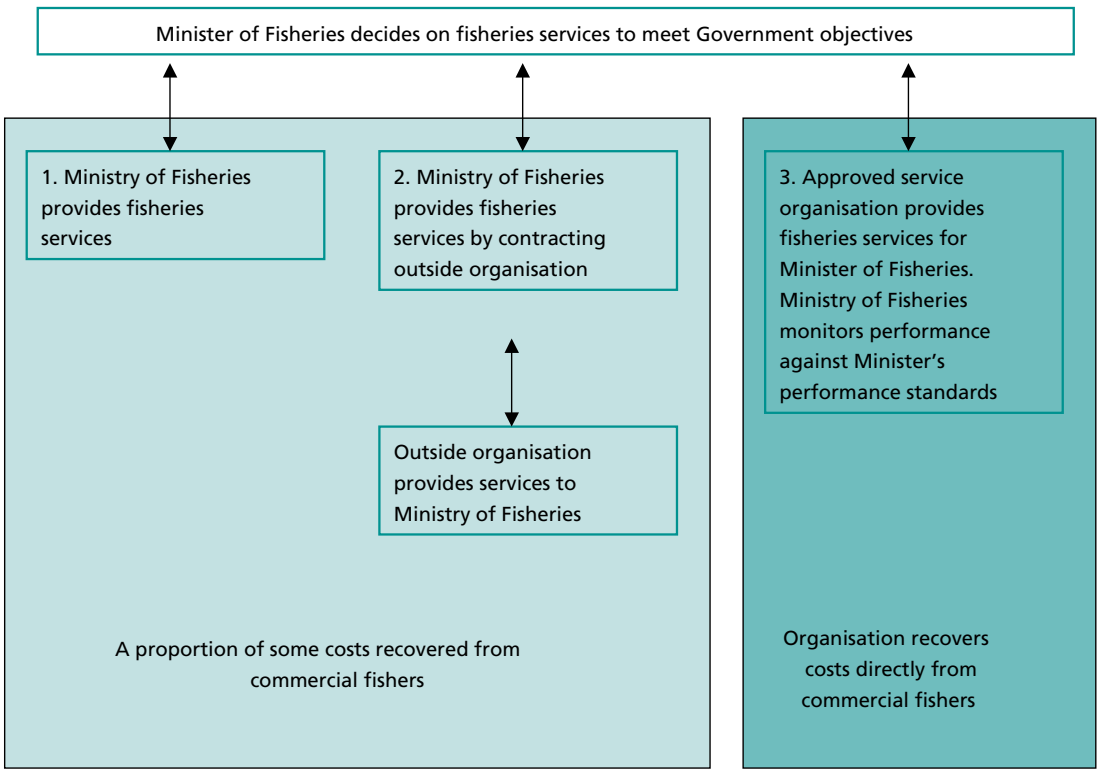
An Executive Team comprising a Chief Executive and two Deputy Chief Executives heads the Ministry. This team sets the strategic direction for the Ministry. There are six core groups in the Ministry of Fisheries: *(i)* Policy and Treaty Strategy; *(ii)* International and Biosecurity; *(iii)* Fisheries Management; *(iii)* Science; *(iv)* Compliance; and *(v)* Service Delivery.

The Ministry of Fisheries is responsible doing a set of activities (grouped together into "outputs") for the Minister of Fisheries. Each year these outputs are negotiated with the Minister as part of the budget process. The outputs reflect what the Minister thinks the Ministry should contribute towards the objectives for fisheries (discussed above). These outputs are grouped into classes with the following headings (percentage of 2003-2004 budget shown in brackets):

- Policy Framework (6 percent)
- Fisheries Information and Management (38 percent)
- Regulatory Management (12 percent)
- Fisheries Access and Administration (13 percent)
- Enforcement of Fisheries Policies (26 percent)
- Prosecution of Offences (5 percent)

The Ministry contracts the provision of certain services. For example, research services providers conduct a large proportion of stock assessment and biodiversity research under contract for the Ministry. The National Institute of Water and Atmospheric Research is an example of such a research service provider. Some fisheries administration activities have been devolved completely out of the Ministry and it now

FIGURE 1
Approaches for Providing Fisheries Services



only performs a performance-monitoring role. Certain registry services (e.g., vessel registrations) are conducted by approved delivery organisation according to standards set by the Minister. Figure 1 illustrates the three approaches currently employed.

The Ministry of Fisheries carries out monitoring and enforcement of fisheries management rules. Its objective is to achieve optimal levels of compliance by maximising voluntary compliance and maintaining and effective deterrent against illegal activity. "Optimal compliance" means the stage when costs of an additional compliance measure equal the additional benefits. "Maximising voluntary compliance" means encouraging fishers to comply voluntarily with fisheries laws. "Creating effective deterrence against illegal activity" means ensuring the costs of non-compliance outweigh the benefits of illegal activity.

Monitoring and enforcement activities are challenging with New Zealand's long, sparsely populated coastline and large fisheries jurisdiction. The Ministry has a number of compliance officers stationed around the country. It also has a large network of "honorary" fisheries officers who do valuable working ensuring compliance with non-commercial fishing rules. Other important futures of the compliance operations include:

- Vessel monitoring systems
- At sea monitoring and inspections
- Landing and unloading monitoring and inspections
- Port and zone entry/exit notifications
- Auditing and inspecting premises and fishing records
- Education on fisheries rules

This Ministry works with the police and the defence forces (airforce and navy) in carrying out this role. The airforce conducts airborne monitoring of fishing activity in and the navy carries out at-sea monitoring and inspections.

STATUS OF FISHERIES

New Zealand fisheries waters comprise the exclusive economic zone, the territorial sea, internal waters and freshwater or estuarine waters where fish, aquatic life or seaweed is found.[3] This fisheries jurisdiction is amongst the largest in the world, covering some 4.5 million square kilometres. The marine waters are characteristically very deep with 72 percent is waters more that 1 000 metres, 22 percent between 200 and 1 000 metres and only 6 percent less than 200 metres. Most commercial caught fish are in waters shallower than 1,200 metres.

A wide diversity of marine species live in New Zealand fisheries waters – including approximately 1 200 species of fish, 2 400 species of molluscs, 2 000 species of crustaceans, 600 species of echinoderms and 900 species of seaweed. Around 130 species are fished commercially. Around 750 000 tonnes greenweight of seafood is harvested annually. Seventy percent of this seafood is taken from deepwater and mid-water stocks, 11 percent from pelagic stocks and 10 percent from farmed species. Inshore fishing provides the base for the majority of owner-operator fishing businesses.

The seafood industry creates about NZD 1.4 billion (US$650 million) in annual exports and NZD 150 million (US$70 million) in annual domestic sales and contributes NZD 1.7 billion (US$790 million) to the Gross Domestic Product (1.8 percent of New Zealand's total GDP). A total of 26 620 full-time equivalent people are employed directly and through flow-on effects (see Table 1).[4]

TABLE 1
New Zealand Seafood Industry: 2000

	Fishing	Processing	Total
Output (USD million)			
Direct	325	520	845
Indirect	241	671	911
Induced	98	219	317
Total	**664**	**1 410**	**2 074**
Value Added (USD million)			
Direct	113	140	254
Indirect	116	283	399
Induced	47	105	152
Total	**276**	**529**	**805**
Employment (FTEs)			
Direct	4 650	5 870	10 520
Indirect	2 650	8 770	11 420
Induced	1 410	3 240	4 650
Total	**8 710**	**17 880**	**26 590**

Source: McDermott Farigray Group Ltd (2000), Report to the New Zealand Seafood Industry Council.

TABLE 2
New Zealand Fisheries Species: 2002

Species	Volume (tonnes)	Landed Value (USD million)
Hoki	196 000	53
Squid	48 173	23
Southern Blue Whiting	32 500	2
Jack Mackerels	28 085	4
Ling	19 562	16
Oreos	18 721	9
Orange Roughy	14 381	27
Hake	14 103	11
Snapper	6 328	12
Rock Lobster	3 238	56

Source: Ministry of Fisheries

Hoki, squid, southern blue whiting and jack mackerels provide the largest volumes of catch in the marine capture fishery (see Table 2). Hoki, rock lobster, orange roughy and squid are the most valuable.

MANAGEMENT ACTIVITY

Management Framework

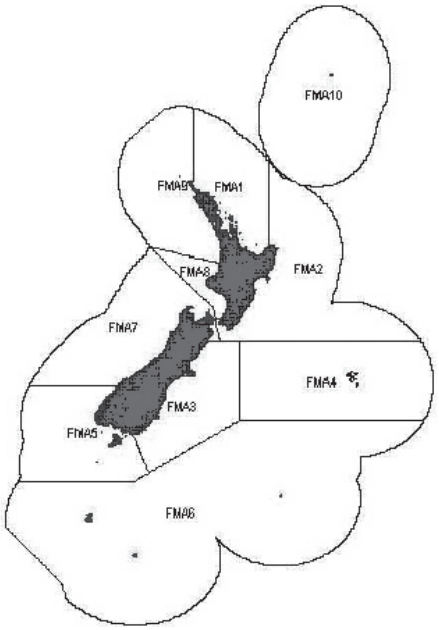
For marine capture fisheries management, the fisheries waters around New Zealand are divided into Fisheries Management Areas (FMAs).

Management of fisheries occurs at the stock level. A stock is the basic management unit for management of fish, aquatic life and seaweed. A stock can be across a number of FMAs, like the main hoki (HOK1) stock, which comprises FMAs 1-9. Or it can be part of an FMA, like an orange roughy stock (ORH2B), which occupies a part of FMA 2.

[3] Section 2 of the Fisheries Act 1996

[4] New Zealand Seafood Industry Council (2001), *The New Zealand Seafood Industry Economic Review 1997-2001*, Wellington.

FIGURE 2
New Zealand Fisheries Management Areas



Guided by the purpose and principles of the Fisheries Act 1996, fisheries management decision makers seek to ensure sustainability and provide for utilisation of fisheries resources. This means setting limits on harvests and allocating those harvests amongst sectors. In New Zealand the preferred framework for managing fisheries is using the Quota Management System (QMS). Figure 3 illustrates how the QMS sustainability limits are set and use is provided for through allocation to fishers.

The TAC represents the assessment of the total amount of fish that can be sustainably removed from a stock in any one year. It encompasses all extraction from the sea by all users. Except in limited cases[5] it must be set by the Minister of Fisheries with reference to the maximum sustainable yield (MSY) or the greatest yield that can be achieved over time while maintaining the stock's productive capacity. The stock might be fished down to a size that can produce MSY or rebuilt to a level that can produce MSY. Other sustainability measures include controls to avoid or mitigate bycatch of protected species. Technical measures, such as area closures and gear restrictions, are also used.

Setting the TACC

The Minister of Fisheries sets the TACC for a particular fishing year, after first making allowance for recreational and Maori customary fishing and all other sources of fishing. Based on this allowance and the available scientific data the Minister decides what the TACC should be. In the rock lobster fishery on the east coast of the North Island, for example, in 2001-02 a TAC of 453 tonnes was set, with a 20 tonne allowance for customary fishing, a 20 tonne allowance for recreational fishing and an 86 tonne allowance for illegal fishing.

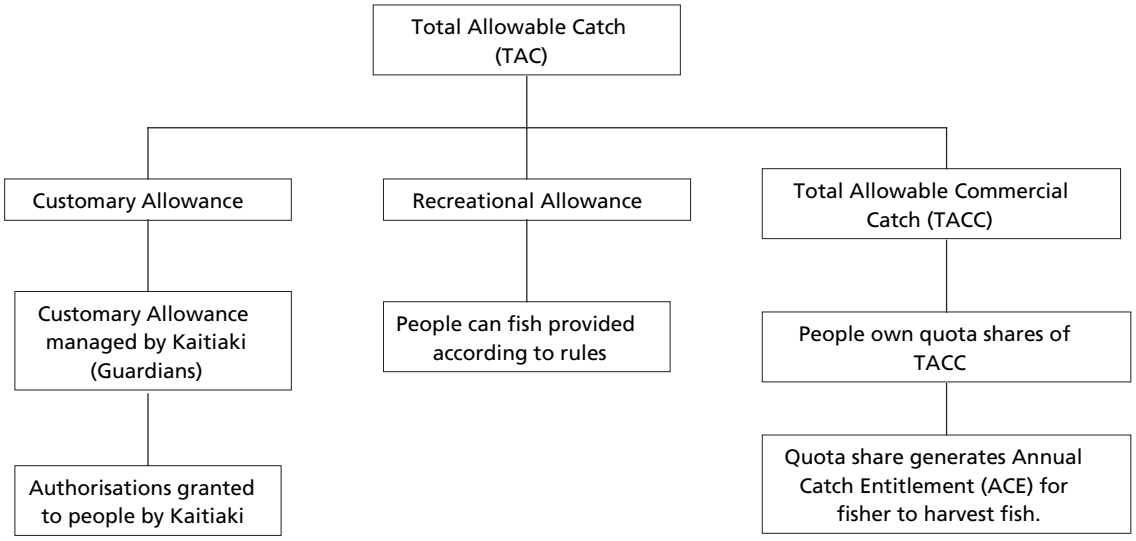
Before setting or varying a TACC the Minister must consult with all interested parties, including representatives of Maori, commercial, recreational and environmental interests.

The TACC is divided into quota shares, which can be owned by individuals or companies. Each quota share generates an Annual Catch Entitlement (ACE) at the beginning of each fishing year. ACE therefore represent the amount of a particular species a fisher can physically catch in a particular fishing year. Both ACE and quota shares are freely tradable. For all stocks, the commercial fisher must balance the catch with ACE or pay a "deemed value" for the fish. A deemed value is an administrative fee set at a level designed to encourage fishers to acquire ACE to cover their catch. A commercial fisher will be liable for deemed values for any catch in excess of ACE held on a monthly basis. A deemed value demand may be satisfied by acquiring ACE or by paying the amount demanded. If a person does not take one of these courses of action, his or her commercial fishing permit can be suspended. Permits are not transferable and to go fishing without one is a serious criminal offence. This catch-balancing regime is administrative in nature, but set within a criminal offence regime.[6]

[5] The exceptions are stocks whose biological characteristics mean MSY cannot be estimated (e.g. squid), enhanced stocks, and international stocks where New Zealand's catch limit is determined as part of an international agreement.

[6] See Peacey (2002), *Managing Catch Limits in Multi-Species, ITQ Fisheries*, Proceedings of 11th Biennial Conference of International Institute for Fisheries Economics and Trade, Wellington.

FIGURE 3
Allocating the Total Allowable Catch



A commercial fisher is required to have an appropriate fishing permit before taking fish, aquatic life or seaweed for sale. There is currently a moratorium on the issue of new permits authorising take of non-QMS species (there is, however, an exemption for tuna). The moratorium is considered necessary to restrict the expansion of catch and effort in commercial fisheries until they can be moved to the QMS. Special permits can be issued for research, education and other approved purposes.

Commercial fishing vessels must also be registered under the Fisheries Act 1996. Vessel numbers are not restricted. New Zealand commercial fishers – through vessel charter arrangements – can employ foreign flagged fishing vessels to harvest fish. To do so, consent is required from the Ministry of Fisheries and the vessel must be registered.

A person wanting to go commercial fishing for hoki, for example, would be required to hold a commercial fishing permit and use a registered fishing vessel. The hoki caught would need to be no more than the amount of ACE he or she owns. If catch exceeds ACE, the fisher will receive a deemed value charge.

Recreational fishing

The 20 percent of New Zealand's population that engage in recreational fisheries target some 40 species. Popular species include snapper, kahawai and kingfish. Recreational fishers have traditionally had strong, if not well-defined, rights in the New Zealand fishery. Recreational fishers do not have quota, but are managed through input controls – namely, individual daily bag limits and size limits. For fisheries where there is a recreational interest, an allowance is made for recreational catch when the Government makes its TACC decisions.

Maori fisheries

A regulatory framework provides for Maori customary non-commercial fishing to be managed by Maori communities at a local level. The regulations set up a framework for Kaitiaki (guardians) to issue authorisations for people to gather seafood for customary purposes. The regulations also recognise the special relationship between Maori and their traditional fishing grounds by providing for the establishment of mataitai reserves – areas to be managed by local Maori through the making of bylaws governing the taking of fish within those areas.

Maori may also seek the establishment of *taiapure*-local fisheries areas for areas of special significance to *tangata whenua*. Once a *taiapure*-local fisheries area has been established, a management committee is appointed on the basis of nominations from the local Maori community. *Taiapure* management committees may recommend the making of general fisheries regulations to the Minister of Fisheries for the management of fish within the *taiapure* area, including regulations relating to commercial, recreational or customary fishing. Seven taiapure-local fisheries areas have been established to date.

In addition to the devolution of management authority described above, the Fisheries Act 1996 requires the Government to provide for the input and participation of *tangata whenua* in New Zealand's fisheries management decision making processes (e.g., setting TACs). For fisheries managed in the QMS where there is a customary fishing interest, an allowance is made for customary catch when the Government makes its TACC decisions. When making an allowance for customary Maori fishing interests, the Minister is required to take into account *mataitai* reserves and any fishing restrictions established by the customary regulatory framework.

Management Tools

The Fisheries Act 1996 contains a range of tools to manage fisheries resources. In recent years a preference has emerged for using the QMS for managing commercial fisheries. Other frameworks are available, like competitive catch limits and individual catch entitlements, but they have been relatively ineffective at meeting the Government's objectives.

The QMS is used to manage over 85 percent of New Zealand's commercial fishery harvest.[7] That figure is likely to grow as further commercial species are introduced into the QMS. Since the QMS was introduced in 1986 with an initial 29 species or species groups, its coverage has steadily grown and it is now used to manage 55 species or species groups. A further 18 new species are scheduled for introduction into the QMS before the middle of 2004.

While the QMS is the primary management intervention, it is supplemented by various regulations and controls (e.g., mesh sizes, closed areas, vessel size limitations). These supplementary interventions are an important part in achieving sustainability objectives and managing allocation between sector groups.

The Government and Maori have worked together since the mid-1990s to develop a legal framework for the ongoing protection of customary non-commercial fishing activity. A regulatory framework gives *tangata whenua* the ability to manage their fisheries using individual fishing authorisations, *taiapure*-local fisheries areas and *mataitai* reserves (discussed above).

Fishery Assessment and Status of Stocks

Harvested fish stocks are subject to a fishery assessment each fishing year. This assessment looks at information, which can include catches, biological information and research data, determining biomass levels. The objective of this work is to assess the sustainability of current catch levels and limits. Where possible and needed, and depending on information available, a stock assessment model of a stock may be constructed.

There are currently 55 species or species groups in the QMS comprising, for management purposes, approximately 350 fish stocks. Using scientific assessment models, the status of approximately 40 of these stocks has been assessed. This situation compares favourably with that in 1997-98, when 26 stocks were assessed. In this discussion, stocks are as "status known" if:

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[7] Bess R., and Harte M. (2001), *The Role of Property Rights: The Development of the New Zealand Seafood Industry,* marine Policy (24), pp 331-339.

TABLE 3
Status of Stocks that were introduced into the QMS in 1986

Stock Status	1994	%	2002	%
Above target level	13	9	22.5	15
Sustainable Levels	48	32	42	28
Sustainable levels (rebuilding)	13	9	14.5	10
Status of Stocks Unknown	75	50	71	47
Total	**149**	**100**	**150**	**100**

Source: Ministry of Fisheries

- A stock assessment model has been developed that can estimate whether or not recent biomass levels are at or above the target biomass for that stock (commonly BMSY) or
- If the stock assessment plenary (made up of stakeholders, scientists and Government officials) has drawn a conclusion about the status of the stock based on other information.
- If not falling into one of these categories, a stock is counted as "status unknown".

The stocks can be further categorised into high value, medium value and low value categories. These relate to the main value of the stock whether to commercial fishers, recreational fishers or Maori customary fishers. Over 60 percent of stocks for which their status is known are considered high value stocks. Furthermore, nearly 90 percent are considered to be of high-medium value. For the over 300 stocks for which their status is unknown, nearly 70 percent are considered to be of low value. Almost 20 percent of these stocks fall into the high value category and the remaining 10 percent into the medium value category.

Of the 40 stocks that assessed, 26 have biomass sizes greater than target (usually the biomass size that supports B_{MSY}). The remaining 14 stocks have stock sizes below target; these stocks all have rebuilding strategies in place.

Table 3 summarises the changes in stock status for the stocks initially introduced into the QMS (excluding 30 stocks in the lightly fished FMA 10). Between 1994 and 2002 the number of stocks above the target level and harvested at sustainable levels has increased (74 to 79). The figures in this table cannot be directly compared with those used in the preceding paragraphs. These figures include stocks for which sufficient information exists to judge they are at sustainable levels.

Impediments to More Effective Management

More effective management will likely depend upon capacity, both in Government and in stakeholder groups, that can use the opportunities provided for in the Fisheries Act 1996. For example, the Fisheries Act 1996 provides for fisheries plans as a means for stakeholder groups to develop approaches to improve the value in their fisheries. Unlocking that possibility requires stakeholder groups to be sufficiently resourced, organised and mandated to prepare and implement fisheries plans. Many stakeholder organisations are not yet in the position of being able to take up this opportunity. Stakeholders would be assisted by a set of Government-determined fishery performance standards to guide the development of such fisheries plans. Such standards, which would also be invaluable for Government management strategies, are due to be developed in the near future.

Recreational fishing rights, while strong, are not well defined and not well integrated into fisheries management processes. This poor integration causes problems when decisions are made on TACC setting, with commercial and recreational fishers lobbying to protect their share of the fishery. Better integration and integration of recreational rights would provide greater certainty and better incentives for constructive stakeholder participation in fishery management.

TABLE 4
Costs of Managing Fisheries: 1993-94 to 2002-03 (Figures in US$ 000)

Government Output Groups:	1993-94 Costs		2002-2003 Costs		Real Percentage Change	
	Actual	Budget	Actual	Budget	Actual	Budget
Policy Advice/ Regulatory Management/ Administration	7 210	7 313	9 738	8 480	13	-3
Research	10 465	10 479	9 255	11 964	-26	-4
Enforcement	5 642	5 662	8 613	8 637	28	28
Prosecution	1 179	1 182	1 675	1 530	19	9
Total	**24 497**	**24 636**	**29 280**	**30 611**	**0**	**4**

Sources: New Zealand Ministry of Agriculture and Fisheries (1994), Annual Report 1 July 1993-30 June 1994; Ministry of Fisheries (2003). Statement of Intent 2003/08, including fisheries services to be provided in 2003/04.

More effective management will require implementing an ecosystem approach to managing fisheries. Such an approach, while building on existing fisheries management practices, will incur costs. The Government will face increased monitoring and management costs, stakeholders will be faced with business compliance costs, and the level of utilisation of fisheries resources may, in some fisheries, be constrained. Some methods for implementing an ecosystem approach to fisheries management are costly, require large amounts of information, and require an understanding of marine ecosystems currently beyond the ability of science to deliver. A practical and workable strategy to implement an ecosystem approach in New Zealand is currently being developed.[8]

COSTS AND REVENUES OF FISHERIES MANAGEMENT

The total costs of managing fisheries in New Zealand have remained stable over the last ten years. Table 4 gives a breakdown of the actual and budgeted costs of fisheries management between 1993-94 and 2002-03. In real terms the overall actual costs of management are unchanged, but the budgeted costs have increased by 4 percent.

The subtotals in the table should be interpreted with some caution. Identifying conclusively where the major changes have occurred is difficult. There have been significant organisational reforms over the last ten years. Examples of such reforms include the creation of a stand-alone Ministry of Fisheries, the provision of most research services *via* a contract system and the devolution of certain administration functions to an outside organisation. The restructuring within the Ministry of Fisheries also makes it difficult to compare the outputs groups over the ten-year period.

The overall increase in total costs is due to a range of factors, including increased conflict and litigation with the Government, increased enforcement activities and increased stakeholder consultations. These factors impact costs in the policy, enforcement and prosecution areas that, according to the above table, have all increased since 1993-94.

Since 1994 the costs of certain Government costs have been recovered from the commercial fishing industry. Costs attributable to commercial fishers are recovered for certain research, administration and enforcement activities. About 50 percent of the Ministry of Fisheries budget is cost recovered from commercial fishers (US$15 million). Cost recovered services include those carried out by the Ministry or under contract to the Ministry (e.g., research contracts). For activities that are devolved to outside service provider (e.g., some registry services), costs are up to that organisation to cover. In the case of registry services, the commercial fishing industry owns the organisation and charges its own members for the organisation's services.

[8] See Ministry of Fisheries (2003), *Draft Strategy for Managing the Environmental Effects of Fishing*, Wellington (available at www.fish.govt.nz).

IMPLEMENTATION OF GLOBAL FISHERIES MANDATES AND INITIATIVES

International Legal Instruments

New Zealand is a party to the 1982 UN Convention on the Law of the Sea (ratified on 16 July 1996) and the 1995 UN Fish Stocks Agreement (on 18 April 2001). New Zealand is investigating acceptance of the 1993 FAO Compliance Agreement.

The Fisheries Act 1996 is the means by which New Zealand applies its rights and duties under the 1982 UN Convention. Other obligations also come into play, like those in the Convention on Biological Diversity, Agenda 21 and the Rio Declaration on Environment and Development. The key principles and duties found in the 1982 UN Convention and other international legal instruments can be found in the Fisheries Act 1996. For example, the 1982 UN Convention states a coastal State shall: set an allowable catch for the resource; ensure the resources are conserved and not endangered by over-exploitation; implement measures that maintain and restore resource levels at sizes that produce maximum sustainable yield; take into account the effects of measures on associated and dependant species. These provisions are contained in the Fisheries Act 1996 sections on setting of TACs and other sustainability measures. The Fisheries Act's information and environmental principles are drawn from the Rio Declaration: the application of the precautionary approach and ensuring inter-generational equity.

New Zealand's high seas fisheries international legal rights and duties are also reflected in the Fisheries Act 1996. Part IVA of the Act sets out the legislative means by which New Zealand claims its rights and discharges its duties under the 1995 UN Agreement. Part VIA sets out, among a range of things, a high seas fishing permit regime, a regime for the control of nationals, provisions that cover the discharge of monitoring and control requirements in the context of regional fisheries management organisations (e.g., boarding and inspection provisions), and a system of offences and penalties.

International Plans of Action

Seabirds

The penultimate draft of the National Plan of Action to Reduce the Incidental take of Seabirds in New Zealand Fisheries (NPOA) is currently being consulted on with stakeholders. Seabird interactions occur in the snapper, ling, bluenose and tuna longline fisheries, the ling autoline fishery, as well as the squid, hoki and scampi trawl fisheries. The proposed package of management measures for these fisheries includes the development of voluntary codes of practice, including voluntary input controls, voluntary bycatch limits for albatross and petrels that decrease overtime, and initiatives for undertaking education and awareness building within the fishery.

The requirement to adopt codes of practice, input controls and bycatch limits will be mandatory where there is insufficient uptake of codes or where the measures outlined in codes are inadequate to achieve the goals and objectives of the NPOA. In addition, mandatory input controls and bycatch limits for individual seabird species will be implemented when there is sufficient information to implement these measures effectively. It is expected that the majority of these proposals will be in place by 1 October 2004.

Currently there are two mandatory measures to reduce seabird bycatch: *(i)* mandatory use of standard tori lines in the tuna longline fishery and *(ii)* prohibition on the use of net sonde monitoring cables by trawl vessels. In addition, observer programme (conducted at-sea by Government observers) also monitors, *inter alia*, bycatch of seabirds. A Government conservation services programme investigates and mitigates the adverse effects of fishing on protected species (e.g., seabirds). Other Government research programmes are also conducted on measures to mitigate the adverse effects of commercial fishing on protected species (including seabirds).

A Government-stakeholders workshop in July 2002 sought to enlist the support of New Zealand stakeholders to begin working co-operatively with other countries to reduce bycatch. A group called Southern Seabird Solutions was formed to promote responsible fishing practices that avoid the incidental capture of seabirds, both in New Zealand and in the wider southern ocean. Projects currently underway include: *(i)* production of an English and Spanish language educational video about seabirds and fishing; *(ii)* provision of New Zealand designed tori lines to Australia; *(iii)* refinement and testing of an underwater bait-setting technique.

The commercial fishing industry undertakes various initiatives to reduce incidental catch of seabirds, including funding research into new or improved mitigation measures, voluntarily adopting codes of practice, and adopting best practice ways of fishing (e.g., reduced deck lighting, use of thawed rather than frozen bait, weighted branch lines).

Sharks

A number of shark species are conserved and managed through the Quota Management System (school shark, rig). Information relating to the status of species subject to the QMS is subject to annual review. A further seven shark species considered to require active management are being proposed for introduction into the QMS on 1 October 2004 (blue shark, mako shark, porbeagle shark, spiny dogfish, northern spiny dogfish, seal shark, shovelnose dogfish). Further species will be added to the QMS, as circumstances require.

Illegal, Unregulated and Unreported Fishing

All operators of New Zealand flagged vessels must have a high seas fishing permit to take or transport fish on the high seas. That permit is part of a regulatory regime that enables New Zealand to fulfil its flag state duties under Article 18 of the 1995 UN Agreement. These permits include the requirement for notifications of zone entry/exit, notifications of port entry/exit, vessel monitoring systems, catch and effort reporting, restrictions on transit, prohibitions from fishing for resources managed by arrangements/organizations to which New Zealand is not a participant/member.

The Fisheries Act 1996 also sets out controls on New Zealand nationals using foreign flagged vessels. No New Zealand national may use a foreign vessel to take or transport any fish on the high seas except in accordance with an authorisation issued by a country that:

- Is a party to the Fish Stocks Agreement; or
- Is a party to the FAO Compliance Agreement; or
- Has accepted the obligations of a global regional or subregional fisheries organisation or arrangements to which the organisation relates; or
- Is a signatory to the Fish Stocks Agreement and has legislative and administrative mechanisms to control its vessels on the high seas in accordance with that agreement.

The Fisheries Act 1996 also sets out certain port state controls that allow the Minister of Fisheries to control vessels wishing to enter New Zealand fisheries waters. If a vessel has undermined international conservation and management measures, the Minister may direct that vessel not to enter the internal waters of New Zealand, or direct it to leave the internal waters of New Zealand. These provisions do not prevent a vessel from entering or remaining in New Zealand waters to obtain food, fuel and other goods and services that may be needed before going on to a port outside New Zealand.

Capacity Management

New Zealand's preferred means of managing fisheries is through controls on output from a fishery, not through controls on inputs (or capacity) in fishery. Under the QMS

fishers are free to determine the level of capacity they require to harvest their ACE. The Government does not monitor capacity but ensures that TAC levels are respected and that TAC levels ensure the sustainability of fisheries resources (discussed above). The current moratorium on new permits for non-QMS species, which restricts new entrants, is an example of capacity management in New Zealand fisheries. The permit moratorium is seen as an interim measure until a species is introduced into the QMS.

PARTICIPATION IN REGIONAL FISHERY BODIES

New Zealand is member of several Regional Fishery Bodies (RFBs): Commission for the Conservation of Southern Bluefin Tuna; Commission for the Conservation of Antarctic Marine Resources; Arrangement between the Government of New Zealand and the Government of Australia for the Conservation and Management of Orange Roughy the South Tasman Rise; South Pacific Forum Fisheries Agency; Asia-Pacific Fishery Commission; Asia-Pacific Economic Co-operation Fisheries Working Group, and; [South] Pacific Community. New Zealand is a signatory to the Western Central Pacific Fisheries Convention and will soon ratify it.

Implementing specific conservation and management measures set by RFBs is usually done using specific legislation to translate those measures into obligations on fishers. For example:

- The Fisheries (Southern Bluefin Tuna Quota) Regulations 2000 limit the total catch by New Zealand fishers.
- The Fisheries (South Tasman Rise Orange Roughy Fishery) Regulations 2000 limit the total catch by New Zealand fishers and requires such fishers to hold a specific authorisation to operate in the fishery.
- The Antarctic Marine Living Resources Act 1981 requires a permit for any person wanting to take marine organisms in the Convention Area.

New Zealand has fished in the Northeast Atlantic Fisheries Commission (NEAFC) area of jurisdiction as a cooperating non-member. New Zealand flagged vessels were controlled through high seas permit conditions to require compliance with relevant NEAFC schemes.

SUMMARY AND CONCLUSIONS

Fisheries Management in New Zealand has undergone considerable change in the past ten years. The Maori fisheries settlement in 1992 and the passage into law of the Fisheries Act 1996 where significant achievements, providing a basis for sustainable utilisation of fisheries resources. Much of the effort since then has focused on implementing the frameworks set out in fisheries legislation.

Considerable institutional reform has accompanied the changes. The creation of the Ministry of Fisheries in 1995 means that fisheries management is administered by a stand-alone organisation. The Ministry contracts certain services that previously had been provided by central Government (e.g., research services). More recently, some fisheries administration services have been devolved to an outside organisation.

The coverage of the QMS had been extended over the last decade and now covers more than 85 percent of commercial fisheries. The expectation is that up to 75 species or species groups will be managed using the QMS by the end of 2004. The establishment of a regulatory framework for Maori to manage their customary fisheries has also been significant. The establishment of an authorisation system and a means of setting bylaws through *taiapure* and *mataitai* have improved the prospects for local management. The speed of implementation will in part depend on Government assistance.

In the future, the Government will likely continue to reform and implement fisheries frameworks to achieve its objectives for fisheries. These efforts may focus on the following areas. First, improving stakeholder collective action so that greater value can be extracted from the fishery. Stakeholders could have the opportunity to develop

and implement approaches to improve returns from the management of fisheries. For these opportunities to be realised, capacity within the Government and within stakeholder groups will have to be built up. Second, the integration of stakeholder rights could be improved. Currently some stakeholder groups have few incentives to work together because of the poorly defined nature of their rights.

A major challenge for the Government will be implementing an ecosystem approach to fisheries. Obligations to implement such an approach clearly flow from the Fisheries Act 1996. But, like other countries around the world, New Zealand is grappling with implementation. The costs of such an approach may be high and it may require a more prudent and precautionary approach where there is poor information. The translation of the approach into operational standards for fisheries management will be an interesting challenge in the near future.

REFERENCES

Bess R., and Harte M. 2001. The Role of Property Rights: The Development of the New Zealand Seafood Industry, *Marine Policy* (24), pp 331-339.

McDermott Fairgray Group Ltd. 2000. *Economic Impact Assessment for New Zealand Regions,* Report to the New Zealand Seafood Industry Council, Wellington.

Ministry of Agriculture and Fisheries. 1994. *Annual Report 1 July 1993- 30 June 1994*, Wellington.

Ministry of Fisheries. 2003. Internet website www.fish.govt.nz

Ministry of Fisheries. 2003. *Report of the Fishery Assessment Plenary*, May 2003: stock assessments and yield estimates, compiled by J.H. Annala, K.J. Sullivan, C.J. O'Brien, N.W. McL. Smith and S.M. Grayling, Wellington.

Ministry of Fisheries. 2003. *Statement of Intent 2003/08, including fisheries services to be provided in 2003/04*, Wellington.

Ministry of Fisheries. date unknown. *A guide to the Kaimoana Customary Fishing Regulations 1998*, Wellington.

Seafood Industry Council. 2001. *The New Zealand Seafood Industry Economic Review 1997-2001*, Wellington.

APPENDIX TABLES

Current Management of Marine Capture Fisheries in New Zealand

Level of Management	% Fisheries Managed	% with Fisheries Management Plan	% with Published Regulations	Trends in the number of Managed Fisheries over ten yrs. (increasing/decreasing/unchanged)
National	Over 90%	None	Over 90%	Increasing
Regional	Not applicable	Not applicable	Not applicable	Not applicable
Local	Not applicable	Not applicable	Not applicable	Not applicable

Summary information for three largest fisheries (by volume) in New Zealand (2001-02)

Category of Fishery	Fishery	Volume mil tons	Value* mil US$	% of Total Volume Caught**	% of Total Value Caught**	Covered by a Management Plan? (Yes/No)	# of Participants	# of Vessels
Industrial	Hoki	196 000	53	29 (estimate)	Information not available	No	288	Information not available
	Squid	48 173	23	7 (estimate)	Same as above	No	380	Same as above
	Southern Blue Whiting	32 500	2	5 (estimate)	Same as above	No	84	Same as above
Artisanal	Grey Mullet	100 (estimate)	Non commercial fishery	Information not available	Non commercial fishery	No	Information not available	Same as above
	Kina	Information not available	Same as above	Same as above	Same as above	No	Same as above	Same as above
	Paua	Information not available	Same as above	Same as above	Same as above	No	Same as above	Same as above
Recreational	Snapper	2 320	Same as above	Same as above	Same as above	No	Same as above	Same as above
	Kahawai	2 190	Same as above	Same as above	Same as above	No	Same as above	Same as above
	Kingfish	800	Same as above	Same as above	Same as above	No	Same as above	Same as above

* Value in 2002 U.S. Dollars; ** % values are based on totals for each category of fishery.

Use of Fishery Management Tools within the three largest fisheries (Primary) in New Zealand – Gaps should be interpreted as "No" or as "not primary management tool"

Category of Fishery	Fishery	Restrictions				License/ Limited Entry	Catch Restrictions	Rights-based Regulations	Taxes/ Royalties	Performance Standards
		Spatial	Temporal	Gear	Size					
Industrial	Hoki						Yes	Yes		
	Squid						Yes	Yes		
	Southern Blue Whiting						Yes	Yes		
Artisanal	Grey Mullet					Yes				
	Kina					Yes				
	Paua					Yes				
Recreational	Snapper				Yes		Yes			
	Kahawai						Yes			
	Kingfish				Yes		Yes			

Costs and Funding Sources of Fisheries Management within the three largest fisheries in New Zealand

Category of Fishery	Fishery	Do Management Funding Outlays Cover			Are Management Funding Sources From		
		R&D	Monitoring & Enforcement	Daily Management	License fees in fishery	License fees from other fisheries	Resource rents
Industrial	Hoki	Yes	Yes	Yes			
	Squid	Yes	Yes	Yes			
	Southern Blue Whiting	Yes	Yes	Yes			
Artisanal	Grey Mullet	Yes	Yes	Yes			
	Kina	Yes	Yes	Yes			
	Paua	Yes	Yes	Yes			
Recreational	Snapper	Yes	Yes	Yes			
	Kahawai	Yes	Yes	Yes			
	Kingfish	Yes	Yes	Yes			

Compliance and Enforcement within the three largest fisheries in New Zealand

Category of Fishery	Fishery	VMS	On-board observers	Random dockside inspections	Routine inspections at landing sites	At-sea boarding and inspections	Other (please specify)
Industrial	Hoki	Yes	Yes	Yes	Yes	Yes	Catch and effort reporting, airborne surveillance
	Squid	Yes	Yes	Yes	Yes	Yes	Same as above
	Southern Blue Whiting	Yes	Yes	Yes	Yes	Yes	Same as above
Artisanal	Grey Mullet	No	No	Yes	Yes	Yes	
	Kina	No	No	Yes	Yes	Yes	
	Paua	No	No	Yes	Yes	Yes	
Recreational	Snapper	No	No	Yes	Yes	Yes	
	Kahawai	No	No	Yes	Yes	Yes	
	Kingfish	No	No	Yes	Yes	Yes	

Capacity Management within the three largest fisheries in New Zealand

Category of Fishery	Fishery	Does overfishing exist?	Is fleet capacity measured?	Is CPUE increasing, constant or decreasing?	Have capacity reduction programmes been used?	If used, please specify objectives of capacity reduction programme
Industrial	Hoki	No	No	Stock status sustainable	No	
	Squid	No	No	Short lived species	No	
	Southern Blue Whiting	No	No	Stock status sustainable	No	
Artisanal	Grey Mullet	No	No	Information not available	No	
	Kina	No	No	Same as above	No	
	Paua	No	No	Same as above	No	
Recreational	Snapper	No	No	Same as above	No	
	Kahawai	No	No	Same as above	No	
	Kingfish	No	No	Same as above	No	