

**MANAGING OUR IMPACTS ON NEW ZEALAND'S MARINE
ENVIRONMENT**

WORKING PAPER I - CONTEXT

*A stocktake of the current framework for marine environmental management
in New Zealand*

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This preliminary working paper has been prepared by the Ministry for the Environment, the Department of Conservation, and the Ministry of Fisheries, with input from a wide range of government departments.

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1. Introduction

1.1 Purpose

The Ministers of Conservation, and of Food, Fibre, Biosecurity and Border Control, and the Minister for the Environment have directed officials to carry out stocktake of arrangements for the management of New Zealand's marine environment. Before such a stocktake can commence, we must have a clear and agreed understanding of the current institutional context within which such management occurs. Marine environmental management is complex, not just in New Zealand. This area represents the interface between:

- international and domestic law;
- terrestrial and marine ecological systems;
- resource development and conservation imperatives.

The marine environment is hugely complex and logistically difficult. There are often considerable gaps in our information about the marine environment.

This working paper presents the results of a preliminary analysis of the context for marine management in New Zealand. It is intended to initiate discussion on marine management in New Zealand – it does not suggest solutions to real or perceived problems. This paper should be read in conjunction with Working Paper II - Marine Environmental Issues.

1.2 New Zealand's marine environment

1.2.1 Definitions

New Zealand's marine environment can be divided into six broad administrative domains:

Internal Waters, Coastal Marine Area and Territorial Sea

The extent of a coastal state's rights and duties change the further seawards that such a state undertakes activities. In internal waters and territorial sea we enjoy **sovereignty** over the entire area and its resources to a distance of 12 nautical miles from the low-water line. We are, however, bound to afford the right of innocent passage through the territorial sea.

The coastal marine area is the foreshore, seabed, and coastal water, and the air space above the water of which the seaward boundary is the outer limits of the territorial sea. The landward boundary is the line of mean high water springs¹.

The **territorial** sea extends out to 12 nautical miles (approximately 22km) from the low-water mark along the coast of New Zealand, including the coast of all islands (often referred to as the "12 mile limit"). It includes enclosed bays and harbours,

Contiguous Zone

¹ except where the landward boundary crosses a river. The landward boundary at that point shall be whichever is the lesser of (i) one kilometre upstream from the mouth of the river; or (ii) the point upstream that is calculated by multiplying the width of the river mouth by five (Part I s2 RMA)

This zone lies between the outer edge of the territorial sea and a limit of 24 nautical miles from the low-water line. It allows a coastal state to extend its jurisdiction beyond the territorial sea for two explicit purposes, to exercise such control as is necessary to *prevent* and to *punish* infringements of its customs, immigration, tax and sanitary laws.

Exclusive Economic Zone

The **Exclusive Economic Zone** (EEZ) extends out from the seaward edge of the territorial sea to a limit of 200 nautical miles (often referred to as the “200 mile limit”).

In the 200 nautical mile exclusive economic zone (EEZ) our rights are more limited and our duties are greater. Our **sovereignty** is more circumscribed. We exercise “**sovereign rights**”² over the resources of the EEZ and “**jurisdiction**” over scientific research, protection of the environment, and artificial structures. However, a coastal state owes considerably more duties than is the case in the territorial sea: many of the freedoms of other states in our EEZ are the same as those that are enjoyed on the high seas³ such as the freedoms of navigation, over-flight, fishing and scientific research. These freedoms are not unqualified (see, for example, footnote 2 of this paper) but they clearly differentiate the legal status of the EEZ from that of the territorial sea.

Continental Shelf

The seabed of the **continental shelf**⁴ extends, in some cases, beyond 200 nautical miles. On the continental shelf outside 12 nautical miles, we exercise similar rights to those relating to the resources in our EEZ. That is, we enjoy **sovereign rights** to the resources on and under the continental shelf. Where the continental shelf extends beyond two hundred miles from the low-water mark the regime of that part of the continental shelf is different to that of the EEZ. Where it extends beyond 200 nautical miles it does so without having any effect on the water column above it. In other words, the sovereign rights we exercise over the resources of the continental shelf may extend further seawards than the sovereign rights we enjoy over the resources in the sea column above it which are confined to the 200 nautical mile mark. Moreover, we are required to share with the international community (see below) a proportion of any revenue earned from exploiting the resources of the continental shelf beyond 200 nautical miles.

Under the United Nations Convention on the Law of the Sea (UNCLOS)⁵ New Zealand has to define the limits of our continental shelf by 2006. LINZ is the lead agency for technical aspects of the Continental Shelf Project. MFAT is lead agency for political aspects. The key outcome of the Continental Shelf Project will be the provision of technical data and reports to

² e.g., in relation to fish, until we developed the capacity to harvest the entire allowable catch we were required to give other fishing nations access to our EEZ.

³ i.e., the seas beyond the outer limits of the 200 mile EEZ

⁴ The continental shelf is defined in the Continental Shelf Act 1964 as “the seabed and subsoil of those submarine areas that extend beyond the territorial limits of New Zealand, throughout the natural prolongation of the land territory of New Zealand, to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend to that distance”.

⁵ See section 3.4 of this report for more information on UNCLOS

support New Zealand's claim to define the limits of the continental shelf. This is for sovereign rights in perpetuity to living and non-living resources of the seabed and subsoil of the continental shelf outside the existing EEZ.

Common Heritage of Mankind (or deep seabed)⁶

The deep seabed beyond the outer edge of the continental shelf is vested in the international community. That area (“the common heritage of mankind”) belongs to the international community as a whole and is administered by the International Seabed Authority.

High Seas

Finally, as already noted, the seas (as opposed to the seabed) beyond the outer edge of the EEZ are the high seas. They are open to all states, although the freedoms exercised on them must not undermine the rights of coastal states. The UN Fish Stocks Agreement 1995 provides a framework for managing the fish stocks of the high seas. New Zealand has decided to ratify the agreement and is now working on legislation to implement it. The legislation will introduce a system of high seas fishing permits to control fishing in the high seas.

1.2.2 A Sea of Treasures

New Zealand’s EEZ is the fourth largest in the world, with an area of 405 million hectares.⁷ This amounts to 15.1 times that of the land mass. This vast marine environment spans over 30 degrees of latitude, from subtropical Raoul Island to south of subantarctic Campbell Island. It ranges from shallow intertidal estuaries to very deep sea trenches.

Marine biodiversity is of particular significance and it has been suggested that our marine area contains our most important ecosystem.⁸ Indeed, there has been a recent suggestion that life “started” over 3.5 billion years ago in hot hydrothermal vents deep under ancient ocean waves.⁹ Much of the world’s wealth of biodiversity is found in highly diverse marine and coastal habitats. Although far fewer marine species have been described than terrestrial species, scientists are continually discovering new marine species. Some 8000 species have been described so far in New Zealand waters - including 61 seabirds, 41 marine mammals, 964 fish, 2000 molluscs and 700 species of seaweeds.¹⁰ Between 1997 and 1999 additional species were described raising the numbers of known fish species to 1140 species. Marine ecosystems provide many critical services, such as regulating climate, providing a sink for nutrients, and treating and assimilating wastes.

New Zealand is one of the world’s most well-endowed coastal states. Over 90% of New Zealand’s exports and imports by value and almost 99% by volume are carried by sea.

⁶ Article 140 UNCLOS

⁷ Blezard, R. H (1980) *Calculated sea area of the New Zealand 200 nautical mile Exclusive Economic Zone* New Zealand Journal of Marine and Freshwater Research 14(2): 137-138.

⁸ Department of Conservation and Ministry for the Environment (1998). *Draft New Zealand Biodiversity Strategy*.

⁹ Penvenne, quoting De Ronde, in “Life’s Scalding Origins”, *Earth*, June 1997, p 53.

¹⁰ Taylor, R. and Smith, I (1997). *The State of New Zealand’s Environment*. p7-25. Wellington: Ministry for the Environment.

Fisheries sales are projected to be worth around \$1.7 billion annually in export revenues by the year 2000¹¹. The aquaculture industry is projected to grow to \$250 million per annum in exports by the year 2010. Mineral deposits include: the Chatham Rise phosphoric deposit (substantial deposit but value only estimated)¹²; alluvial gold, salt, silica aggregates (estimated at \$30-40 million); and hydrocarbon resources (at \$600 million per annum).¹³

Key non-governmental stakeholders in the marine environment include:

- Maori
- scientists and academics
- the general public and communications sector
- recreational and customary fishers
- environmental groups
- the fishing industry
- non-fishing recreationalists
- the maritime transport industry
- the energy sector and
- the minerals sector

Many management responsibilities rest with local government.

The multiple nature of the demands placed on the marine environment are recognised in the United Nations Convention on Law of the Sea which states that:

Activities shall be carried out in such a manner as to foster healthy development of the world economy and balanced growth of international trade, and to promote international co-operation for the over-all developments of all countries, with a view to ensuring:

- the development of resources of the Areas
- orderly, safe and rational management of the resource....including the efficient conduct of activities in the Area and, in accordance with sound principles of conservation, the avoidance of unnecessary waste (UNCLOS Article 150).

¹¹ Statistics New Zealand (1997) *New Zealand Official Year Book 1997*, GP Publications, Wellington.

¹² Glasby, G. P; Wright, I. C. (1990) *Marine Mineral Potential in New Zealand's Exclusive Economic Zone* Marine Mining No.9 p403-427 .

¹³ Taylor, R. and Smith, I (1997). *The State of New Zealand's Environment*. p7-25. Wellington: Ministry for the Environment.

It goes on to state that:

States have the obligations to protect and preserve the marine environment (UNCLOS Article 192).

States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment (UNCLOS Article 193).

1.3 The need for a stocktake of marine management in New Zealand

Management of the marine environment can be considered to include diverse elements such as maritime transport, defence and security, research including indicators and monitoring, climate and weather patterns, communications, energy transfer (cabling), resource extraction and exploration, biosecurity, recreation (above and below the sea), spiritual and cultural connections with people, international relations, property rights and marine biodiversity.

New Zealand is an extremely small country in terms of GDP, yet we have the fourth largest EEZ in the world. In terms of resourcing we have difficulty achieving our international responsibilities, economic opportunities, national security and science and information requirements. Therefore it is important that there is a very robust generic priority setting process in place and that opportunities for national and international co-operation and co-ordination are pursued rigorously.

1998 was the United Nations Year of the Oceans. Many organisations and agencies around the world held meetings and events with an oceans theme during 1998. Outcomes from these meetings contributed to the Oceans and Seas discussions at the seventh session of the Commission for Sustainable Development held in New York in 1999.

In light of:

- increased interest in marine management around the world,
- the diversity of activity, management, and regulatory instruments in New Zealand's marine environment, and
- concerns discussed in sections 2.2 and 2.3 below

the Minister of Food, Fibre, Biosecurity and Border Control, Minister of Conservation and the Minister for the Environment considered it timely to conduct a stocktake of marine management in New Zealand.

This report provides an initial review of the context for marine environmental management in New Zealand. It is intended to assist policy development by departments responsible for aspects of marine management and should be read in association with Working Paper 2: Issues.

2. Background

2.1 The State of New Zealand's Environment

In 1997, MfE published *The State of New Zealand's Environment*¹⁴. This report intended to inform New Zealanders about the state of our environment and to help identify areas where our environmental management could be improved. Key conclusions in the report which relate to the marine environment included:

- New Zealand's environmental information needs considerable upgrading if the state of the nation's environment is to be accurately described and trends detected.
- Biodiversity decline is New Zealand's most pervasive environmental issue¹⁵.
- The main pressures on water quality are non-point source pollution (from diffuse pasture runoff and from paved surfaces in urban areas) and point sources (e.g. factories and sewage outfalls).
- The more difficult and pervasive problem of non-point source discharges has yet to be addressed and will require changes in land management.
- The status of more than half the exploited fish stocks is unknown. The more important species are better known and about 70% of the catch, in tonnage, is from fisheries where the biomass relative to the level which will give the maximum sustainable yield (Bmsy) is known.

Results for the 1998 assessments¹⁶ are for the 149 fish stocks considered:

- 87 (or 58% of all stocks) were of unknown status
 - of the remaining 62 -
 - 12 (19%) were below the Bmsy (*the corresponding figure was 9% in the 1996 assessment*)
 - 15 (24%) were above the Bmsy
 - 35 (56%) were near the Bmsy
- Pressures on marine life from fishing include direct harvesting pressure as well as indirect pressures, including bottom disturbance by trawling and dredging and by-catch of non-target species (e.g. marine mammals, seabirds, fish and other aquatic life) and dumping of waste.
 - The new Fisheries Act 1996 recognises that environmental sustainability requires not only sustaining the yield from target stocks but also the maintenance of marine biodiversity and ecosystems.
 - Apart from the Kermadec and Auckland Islands, protected marine reserves are under-represented in both our coastal waters and our deep water ecosystems. Under current legislation the primary purpose for protecting marine ecosystems is, in the national interest, to reserve areas with special characteristics for the purpose of scientific study. However, protected marine areas can act as both reservoirs of biodiversity and recruitment areas for some commercial fisheries.

2.2 The Parliamentary Commissioner for the Environment's report

¹⁴ Taylor, R. and Smith, I (1997). *The State of New Zealand's Environment*. Wellington: Ministry for the Environment.

¹⁵ This comment applies to New Zealand's environment, and is not restricted to the marine environment.

¹⁶ Ministry of Fisheries - communication 19/5/99.

In 1996, the Parliamentary Commissioner for the Environment (PCE) published *Environmental Management of Petroleum and Mining Activities Outside the 12 Mile Limit*. The Commissioner recommended that the Minister for the Environment set up a multi-agency working group to:

1. **clarify procedures** for the management of petroleum and mineral mining activities affecting the environment beyond the 12-nautical mile limit;
2. **nominate a lead agency** to co-ordinate the large number of Crown agencies with environmental management responsibilities beyond the 12 nautical mile limit; and
3. **identify strategies** whereby environmental effects assessment, environmental condition setting and enforcement, and public consultation are included in management procedures for petroleum and mineral mining activities beyond the 12 nautical mile limit and are consistent with procedures inside the 12 nautical mile limit.

The Minister for the Environment responded to the PCE's report by suggesting that since there would not be any new development proposals for the continental shelf over the next few years (from publication of the report), there would be little risk involved in delaying the work recommended by the PCE until 1998/99. The delay was also intended to allow any review of current arrangements to monitor the scope and effectiveness of marine protection rules developed under the Maritime Transport Act (MTA) (out to the outer limit of the EEZ) and marine pollution regulations under the Resource Management Act (RMA) (out to 12 nautical miles) to implement MARPOL and the 1996 Protocol to the London Convention¹⁷.

The PCE has subsequently commenced a review of the marine environment "to identify but not resolve systems issues, and to identify key environmental management "hotspots" (strategic weaknesses) as priorities for future work for the PCE and other organisations"¹⁸.

2.3 The Seaviews Conference

In recent years there has been a groundswell of concern emerging among environmental groups for a more comprehensive policy in marine management. This concern culminated in the Seaviews conference organised by the Environment and Conservation Organisations of New Zealand (ECO) in February 1998¹⁹. The conference was well attended by a variety of NGOs, academics and government agencies. The focus, however, was very much on the impacts of fishing (commercial, customary and recreational) and relatively little was discussed in relation to the possible impacts of other activities such as mining or exploration.

Messages that came out of the conference included:

- the need to consider an ocean policy (Australia has recently developed one);

¹⁷ Marine Pollution Regulations and Marine Protection Rules came into force on 20 August 1998.

¹⁸ Parliamentary Commissioner for the Environment (1998). *The sea - too blue for you?* Background paper. Parliamentary Commissioner for the Environment, Wellington.

¹⁹ The Seaviews - Marine Ecosystem Management - Obligations and Opportunities Conference was held in Wellington in February 1998. Appendix 2 summarises the main outcomes of the conference. The views of some of the environmental groups participating in the Conference are articulated in Wallace, C. (1998) *Marine Management: Reform Urgent*. Marine Working Group briefing paper. Environment and Conservation Organisations, Wellington.

- the need to consider an ocean strategy (like the Government's *Environment 2010 Strategy*);
- access to information and the paucity of data on the state of the marine environment;
- the need for ecosystem approach to environmental management;
- a lack of coherence in management in the marine environment;
- the implementation of the sustainability provisions of the Fisheries Act;
- inconsistencies between the rights and duties of recreational fishers, customary and commercial fishers - issues of property rights, entitlements, and monitoring;
- problems with community participation in decision-making;
- limited provisions for management at the community level.

The general message of the conference was that marine management in New Zealand lacks coherence (although this was disputed by some attendees). However, this message seemed to be based on the assumption that incoherence arose from the complexity of management and the number of agencies involved. There appeared to be no real analysis of the actual policy substance of the regime, except for the inconsistency and lack of coherence of regimes in place in the marine environment when compared to the terrestrial environment. Many of the participants at the conference looked to MfE to provide leadership in the integration and strategic overview of marine environmental management in New Zealand waters. There was no consensus, however, on what this leadership might entail.

Responsibility for *some* aspects of marine policy and management is perceived to be unclear including:

- marine biosecurity - responsibility for surveillance, monitoring and eradication or containment programmes
- protection of marine habitats, especially outside of the territorial sea
- provisions for integrated ecosystem management
- managing unprotected marine biodiversity other than from the impacts from fishing (which is subject to Fisheries Act 1996)
- co-ordination and dissemination of marine environmental data and information.

3. The institutional context

3.1 Marine environmental management institutions

3.1.1 Domestic management structures

New Zealand has no over-arching marine environmental policy or management system, nor does it have a common set of goals for the marine environment. A variety of laws and agencies deal with management of the territorial sea (see Table 1). Most of these are subject to, or are consistent with, the general principles of the RMA. Beyond our territorial waters, however, environmental management is based upon principles embodied in international treaties (see Table 2). The Fisheries Act, which operates within the territorial sea and the EEZ, has objectives that are broadly similar to the Resource Management Act.

Table 1 The main agencies with responsibility for marine environmental matters are:

| Agency responsibilities and administrative area | Corresponding legislation and international agreements |
|--|--|
| <p>Department of Conservation (DOC)</p> <ul style="list-style-type: none"> • managing and promoting conservation of natural and historic resources • NZ coastal policy within the territorial sea • approval of restricted coastal activities and coastal plans • marine reserves inside the territorial sea • marine mammal and wildlife protection out to the EEZ • public ownership of all foreshore and seabed within the coastal marine area | <ul style="list-style-type: none"> ⇒ <i>Conservation Act 1987</i> ⇒ <i>Resource Management Act 1991 (RMA) (coastal management)</i> ⇒ <i>Marine Reserves Act 1971</i> ⇒ <i>Marine Mammals Protection Act 1978 and Wildlife Act 1953</i> ⇒ <i>Foreshore and Seabed Endowment Revesting Act 1991</i> |
| <p>Ministry of Fisheries (MFish)</p> <ul style="list-style-type: none"> • sustainable fisheries use within the EEZ • establish and develop marine farming (aquaculture) within the territorial sea • ballast water discharge within the territorial sea (note that powers to board extend to the contiguous zone) • Treaty obligations | <ul style="list-style-type: none"> ⇒ <i>Fisheries Acts 1983 and 1996</i> ⇒ <i>Marine Farming Act 1971</i> ⇒ <i>Biosecurity Act 1993</i> ⇒ <i>Maori Fisheries Act 1989</i> ⇒ <i>Treaty of Waitangi (Fisheries Claims) Settlement Act 1992</i> |

| Agency responsibilities and administrative area (cont'd) | Corresponding legislation and international agreements |
|---|--|
| <p>Regional Councils (RCs)</p> <ul style="list-style-type: none"> • coastal management in association with DOC within the territorial sea • sustainable land management and discharges from the land • marine pollution regulations within the coastal marine area response to small to moderate oil spills within the territorial sea • pest management strategies - could cover marine organisms within the territorial sea | <p>⇒ <i>RMA and the New Zealand Coastal Policy Statement (NZCPS)</i></p> <p>⇒ <i>RMA and Maritime Transport Act 1994</i> <i>London Dumping Convention</i> <i>The International Convention for the Prevention of Pollution from Ships (MARPOL)</i></p> <p>⇒ <i>Biosecurity Act 1993</i></p> |
| <p>Ministry of Transport (MoT)</p> <ul style="list-style-type: none"> • administration of the Maritime Transport Act • administration of the Shipping (Nautical Publications) Regulations. | <p>⇒ <i>Maritime Transport Act 1994</i></p> <p>⇒ <i>Shipping (Nautical Publications) Regulations 1988²⁰</i></p> |
| <p>Maritime Safety Authority (MSA)</p> <ul style="list-style-type: none"> • vessel based discharges, all oil spills beyond the territorial sea, and large oil spills within the territorial sea • administering marine pollution rules beyond the coastal marine area • addressing relevant international marine pollution treaties in these areas • control of hazardous substances and new organisms on ships within the territorial sea | <p>⇒ <i>Maritime Transport Act 1994, including London Dumping Convention</i> <i>MARPOL</i></p> <p>⇒ <i>Hazardous Substances and New Organisms Act 1996 (HSNO)</i></p> |
| <p>Ministry of Commerce (MoC)</p> <ul style="list-style-type: none"> • granting prospecting, exploration and mining permits • granting prospecting or mining licences for minerals beyond the territorial sea • granting prospecting, exploration and mining permits for petroleum beyond the territorial sea • archiving and management of copies of data obtained from prospecting, exploration and mining, and from the Continental Shelf delineation project | <p>⇒ <i>Crown Minerals Act 1991</i></p> <p>⇒ <i>Continental Shelf Act 1964</i></p> <p>⇒ <i>Crown Minerals Act 1991</i></p> |

²⁰ The legislation that gave effect to these regulations has been repealed. However, the regulations remain in force until June 2000 when they will be replaced by rules made under the Maritime Transport Act 1994.

| Agency responsibilities and administrative area (cont'd) | Corresponding legislation and international agreements |
|---|---|
| <p>Environmental Risk Management Authority (ERMA)</p> <ul style="list-style-type: none"> approval of imported or manufactured hazardous substances and the deliberate introduction of new organisms within the EEZ | <p>⇒ <i>Hazardous Substances and New Organisms Act 1996 (HSNO)</i></p> |
| <p>Land Information New Zealand (LINZ)</p> <ul style="list-style-type: none"> Purchaser of Crown funded hydrographic and (some) bathymetric services Steward of Crown hydrographic and (some) bathymetric information, including UNCLOS survey data Lead Agency for Technical Survey programme for NZ's continental shelf claim under UNCLOS | <p>⇒ Cabinet directive (Hydrography) CAB (95) M 48/35</p> <p>⇒ International Hydrographic & Maritime Organisations (IHO-IMO SOLAS Chapt 5 Reg 9)</p> <p>⇒ Cabinet directive (Continental Shelf) CAB(6) M32/11A²¹</p> |
| <p>Ministry of Foreign Affairs and Trade (MFAT)</p> <ul style="list-style-type: none"> creation of exclusion zones around offshore installations co-ordinating NZ participation on UNCLOS matters including the EEZ and continental shelf regimes, and on other international maritime law matters Management of the EEZ through regulations where there are no other suitable regimes in place (s27 allows regulations for a number of purposes - controlling research, protection and preservation of the marine environment, construction of structures, exploitation of energy) | <p>⇒ MARPOL and the <i>London Dumping Convention</i></p> <p>⇒ <i>Continental Shelf Act 1964</i></p> <p>⇒ <i>United Nations Convention on the Law of the Sea</i></p> <p>⇒ <i>Convention on Biological Diversity</i></p> <p>⇒ <i>Convention for the Conservation of Southern Bluefin Tuna</i></p> <p>⇒ <i>United Nations Convention on the Management of High Seas Migratory Fishes and Straddling Stocks</i></p> <p>⇒ <i>Convention on the Prohibition of Fishing with Long Drift Nets in the South Pacific</i></p> <p>⇒ <i>Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar)</i></p> <p>⇒ <i>Territorial Sea, Contiguous Zone, and Exclusive Economic Zone Act 1977</i></p> |

²¹ Detail of this Cabinet reference is provided in CIE (96) M 21/2

| Agency responsibilities and administrative area (cont'd) | Corresponding legislation and international agreements |
|---|--|
| Ministry for the Environment (MfE) | |
| <ul style="list-style-type: none"> • administration of the Resource Management Act • administration of Resource Management (Marine Pollution) Regulations 1998 • administration of HSNO | <ul style="list-style-type: none"> ⇒ <i>Resource Management Act 1991</i> ⇒ <i>Hazardous Substances and New Organisms Act 1996 (HSNO)</i> |
| <ul style="list-style-type: none"> • advice on procedures for the assessment and monitoring of environmental impacts • environmental overview functions • overview sustainable land management | <ul style="list-style-type: none"> ⇒ <i>Environment Act 1986</i> <i>Resource Management Act 1991</i> and Sustainable land management strategy |
| Ministry of Agriculture and Forestry (MAF) | |
| <ul style="list-style-type: none"> • Administering Part III of the Biosecurity Act concerning importing of risk goods. Power to board craft etc extend to the contiguous zone. | <ul style="list-style-type: none"> ⇒ <i>Biosecurity Act 1993</i> |
| Ministry of Health | |
| <ul style="list-style-type: none"> • public health - threats in the marine environment include communicable diseases and toxic algae • administration of the Food Act | <ul style="list-style-type: none"> ⇒ <i>Health Act 1956</i> ⇒ <i>Food Act 1981</i> |
| Ministry of Research, Science and Technology | |
| <ul style="list-style-type: none"> • science policy including policy of marine science | |
| Foundation for Research, Science and Technology | |
| <ul style="list-style-type: none"> • purchasing of public good science outputs including marine science | |

In addition, the Department of Prime Minister and Cabinet (DPMC) co-ordinates policy proposals relating to many mainly non-environmental marine activities among government departments²².

The legislative arrangements listed in Table 1 are described in more detail in Table 2 below. In addition, the Environmental Protection and Enhancement Procedures 1987 (EP & EP) state that the process of environmental impact assessment and, where appropriate, environmental impact reporting is to be applied to the granting by the Crown of all licences, authorisations, permits and privileges which may have environmental implications and which are issued pursuant to a list of Acts. In 1995 the Minister for the Environment confirmed that EP & EP still applied. The status of these procedures in practice, is now unclear.

²² This co-ordination role is the result of a Cabinet directive in 1993 following on from the Porritt Review “Our Oceans; A Wealth of Opportunities”.

Table 2: Managing New Zealand’s marine environment: Key legislation and responsibilities

| Legislation | Purpose (Long titles to the Acts) | Jurisdiction | Administering agency | Operative agency |
|---|---|---|-----------------------------------|--|
| Antarctic (Environment Protection) Act 1994 | to provide for the comprehensive protection of the Antarctic environment and to recognise Antarctica as a natural reserve devoted to peace and science and to implement the protocol on Environmental Protection on the Antarctic Treaty | Part of EEZ: Antarctica means the area south of 60 degrees south latitude, including all ice shelves in the area | MFAT | MSA (some responsibilities) |
| Biosecurity Act 1993 | to restate and reform the law relating to the exclusion, eradication, and effective management of pests and unwanted organisms | territorial sea (note that fish taken in taken in EEZ deemed not to be imports - (s4) and that powers to board extend to the contiguous zone) | MAF lead, plus MFish, Health, DoC | MAF, MFish, Health, DoC Regional councils (s13) |
| Conservation Act 1987 | to promote the conservation of New Zealand’s natural and historic resources, and for that purpose to establish a Department of Conservation | Territorial sea | DoC | DoC |
| Continental Shelf Act 1964 | to make provision as to the exploitation of the continental shelf of New Zealand and for matters connected with that purpose | EEZ + areas where the continental shelf extends beyond this (any “installation or device” operating on the continental shelf is deemed to be in NZ) | MFAT, MoC (Minister of Energy) | MFAT MoC |
| Crown Minerals Act 1991 | to restate and reform the law relating to the management of Crown minerals | Territorial sea of minerals To the limit of the Continental Shelf for petroleum | Minister of Energy, via MoC | MoC |
| Driftnet Prohibition Act 1991 | to prohibit driftnet fishing activities and to implement the Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific | EEZ ²³ | MFAT | MFish |
| Fisheries Act 1983 | to consolidate and reform the law relating to the management and conservation of fisheries and fishery resources within New Zealand and New Zealand fisheries waters | EEZ and Territorial sea (with qualifications/limits - s3) | MFish | MFish |
| Fisheries Act 1996 | to reform and restate the law relating to fisheries resources to recognise New Zealand’s international obligations relating to fishing to provide for related matters <i>Section 8: “the purpose of this Act is to provide for the utilisation of fisheries resources while ensuring sustainability”</i> | EEZ and Territorial sea | MFish | MFish DoC (bycatch impacts, protected species) |
| Foreshore and Seabed Endowment Revesting Act | all foreshore and seabed vested in the Crown | 12 nautical miles | DoC | DoC |
| Hazardous Substances and New Organisms Act 1996 | to restate and reform the law relating to the management of hazardous substances and new organisms <i>Section 4 “the purpose of this Act is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms</i> | Territorial sea | MfE | ERMA MSA (s97) - enforce HSNO on any ship |

| Legislation | Purpose (Long titles of the Acts) | Jurisdiction | Administering | Operative |
|--------------------|--|---------------------|----------------------|------------------|
|--------------------|--|---------------------|----------------------|------------------|

²³ Application extends to NZ vessels engaged in activities with driftnet vessels in the *Convention Area* (i.e. the South Pacific)

| | | | agency | agency |
|--|---|--|---------------|--|
| Health Act 1956 | (protect public health) | | Health | |
| Marine Farming Act 1971 | to consolidate and amend the law relating to the establishment and development in New Zealand waters of an industry for the farming of sea fish, shellfish, oysters and marine vegetation, the leasing and licensing of marine farms, and the marketing of fish, shellfish, and oysters reared and marine vegetation cultivated in marine farms | Territorial sea | MFish | MFish; DoC |
| Marine Mammals Protection Act 1978 | to make provision for the protection, conservation, and management of marine mammals within New Zealand and within New Zealand fisheries waters | EEZ and Territorial sea — “New Zealand fisheries waters as defined in the 1908 Fisheries Act” | DoC | DoC |
| Marine Reserves Act 1971 | to provide for the setting up and management of areas of the sea and foreshore as marine reserves for the purpose of preserving them in their natural state as the habitat of marine life for scientific study | Territorial sea | DoC | DoC |
| Maritime Transport Act 1994 | to continue the Maritime Safety Authority of New Zealand to enable the implementation of New Zealand’s obligations under international maritime agreements to ensure that participants in the maritime transport system are responsible for their actions to consolidate and amend maritime transport law to amend the law relating to the health and safety of seafarers to protect the marine environment from pollution associated with shipping and offshore installations to continue, or enable, the implementation of obligations on New Zealand under various international conventions relating to pollution of the marine environment | Different parts of the ocean are subject to a variety of provisions. Provisions cover the territorial sea, EEZ and the continental shelf. | MoT | MSA, Regional councils have some functions (There is a three tiered approach to oil spills based not on geographic location but clean-up capability) |
| Resource Management Act 1991 | to promote the sustainable management of natural and physical resources <i>section 5(1): purpose of this Act is to promote the sustainable management of natural and physical resources - 5(2) defines “sustainable management”</i> | Territorial sea | MfE | DoC (coastal policy), regional councils |
| Sugar Loaf Islands Marine Protected Area Act 1991 | to ensure that the scenery, natural features, and ecosystems of the Protected Area that should be protected and conserved by reason of their distinctive quality, beauty typicality or uniqueness are conserved. | Within area specified in Act | DoC | DoC |
| Territorial Sea, Contiguous Zone, and Exclusive Economic Zone Act 1977 | to make provision with respect to the territorial sea of New Zealand; and to establish an exclusive economic zone of New Zealand adjacent to the territorial sea, and in the exercise of the sovereign rights of New Zealand to make provision for the exploration and exploitation, and conservation and management, of the resources of this zone; and for matters connected with that purpose | EEZ and Territorial sea | MFAT | MFAT |
| Treaty of Waitangi (Fisheries Claim) Settlement Act 1992 | to give effect to the settlement of claims relating to Maori fishing rights; to make better provision for Maori non-commercial traditional and customary fishing rights to make better provision for Maori participation in the management and conservation of New Zealand’s fisheries | | MFish | MFish |
| Wildlife Act 1953 | to consolidate and amend the law relating to the protection and control of wild animals and birds, the regulation of game shooting seasons, and the constitution and powers of acclimatisation societies | EEZ and territorial sea (<i>After 1996 amendment incorporating several marine species formerly protected under separate legislation</i>) | DoC | DoC |

3.2 The Treaty of Waitangi

The Crown's partners in terms of the Treaty of Waitangi are hapu and iwi Maori. Individuals claiming rights under Article 2 of the Treaty can do so from their status of tangata whenua. Individual Maori have citizenship rights under Article 3 of the Treaty. Article 2 rights of tino rangatiratanga allowed hapu and iwi to have an active role in sustaining the environment.²⁴

Key concepts include:

- spiritual: the idea that we are all linked to Te Timatanga (the creation myths out of which this land was created) and the shared role of Maori and Pakeha as kaitiaki of the environment.
- philosophical: the idea of a pervasive force, such as Te Mauri (life force), giving a powerful and evocative framework to environmental management.
- political: the idea that the Treaty must be mentioned in policy goals.
- operational: the inclusion of tikanga (traditional practice) into environmental management.

A common bond among almost all hapu, iwi and Maori input into MfE's Environmental Performance Indicators Programme was the striking similarity of their holistic views about the world. Most began with the Creation whakapapa and traced the lineage from Io down through to demigods, to humans. The roles of Io, Rangi, and Papa and demi-gods such as Tangaroa (guardian of the seas and fishes) and Tawhirimatea (guardian of the winds and storms) are an integral part of managing and sustaining the environment. Any move by Government or its agencies to assign the Maori view to some clip-on role would be perceived to signal a breach of the Treaty and be unacceptable²⁵.

However, there are significant differences in kawa and tikanga between iwi, reflecting differences in both the natural resources and the aspirations of the iwi. These are best identified through iwi natural resource management plans. Iwi natural resource management plans are planning documents recognised by iwi and which councils, under the Resource Management Act, must have regard to in the preparation of regional plans (s66(2)) and district plans (ss74(2)).

3.3 Relevant strategy documents

A variety of government and departmental strategies contribute to marine management. These include:

- Government's *Strategic Goals and Priorities*

The Government's strategic goal for the environment:

"We treasure our clean, healthy and unique environment and will ensure it continues to sustain nature and people's needs and aspirations. The life-supporting capacity of soil, water, air and ecosystems will continue to be safeguarded and the biological diversity and

²⁴ Gardiner and Parata Ltd (1998). *EPI Programme - Coasts & Estuaries, Biodiversity, Fisheries, Climate change & ozone*. Report to the Ministry for the Environment by Garner and Parata Ltd, Wellington.

²⁵ Gardiner and Parata *op cit*.

spectacular scenery that make New Zealand special place will continue to be able to be enjoyed by future generations.”

Relevant Strategic Priorities include:

SP 3: *“Improve the quality of our regulatory environment”*.

SP 6: *“Safeguard indigenous biodiversity by protecting habitats and controlling introduced pests”*.

- *New Zealand Coastal Policy Statement (1994)*: The Minister of Conservation is required under the RMA to produce the NZCPS. The purpose of the NZCPS is to state policies to promote the sustainable management of natural and physical resources in relation to the coastal environment of New Zealand. The NZCPS guides local authorities in their day to day management of the coastal environment. Regional coastal plans cannot be inconsistent with the NZCPS.
- *The Environment 2010 Strategy (MfE, 1995)*. The Government’s statement on the environment does not have an explicit marine section but the marine environment is covered in goals and action plans relating to water management, and is addressed by elements of the biodiversity, fisheries, pests, weeds and diseases, and transport goals. The Government originally intended to review the *Strategy* in 1999 which would provide an opportunity to place marine management in the wider scope of New Zealand’s environmental management.
- *Changing Course -Towards Sustainable Fisheries 2010 (MFish, 1996)*. This document is the MFish preferred direction for managing fisheries out to 2010 but is not a Government strategy. Ecosystem-based management is the cornerstone of the strategy.
- *Ballast Water and Ship’s Hull De-fouling: A Government Strategy (MFish, 1998)*. The desired outcome of this strategy is that New Zealand’s territorial seas are kept free, to the maximum practical extent, from new harmful species and disease. A secondary goal is to contribute to the development and implementation of the MARPOL Ballast Water Annex under the auspices of the International Maritime Organisation (IMO) within three years. The Strategy builds on the provisions of the Biosecurity Act, the RM Act and the NZCPS.
- *New Zealand Marine Oil Spill Response Strategy (MSA, 1996)* The aim of the strategy is to efficiently and effectively minimise the impact of oil pollution on the marine environment, from ships and oil transfer sites.
- *National Transport Statement. (MoT, Dec 1998)* The overall transport policy objective is that the New Zealand transport system must contribute maximum benefit at minimum cost to New Zealand, consistent with sustainable development.
- *New Zealand Hydrographic and Bathymetric Information Strategy (LINZ, 1997)*. The strategy establishes a framework to underpin decisions related to the purchase of core Crown hydrographic and bathymetric information.

- *RS&T 2010: The Government's Strategy for Research, Science and Technology to the Year 2010* (MoRST, 1996). This strategy has a variety of goals which apply to marine science (see section 3.5).
- Public Good Science Fund (PGSF) strategy documents (Foundation of Research, Science and Technology). The primary function of the Foundation is the allocation of funds for the production of science and technology outputs (see section 3.5).
- *Statement of Science Priorities (MoRST, 1999)*. Four goals have been identified which will assist targeting research, science and technology investment. The three that relate to the environment are:
 - Innovation goal: Accelerate knowledge creation and the development of human capital, social capital, learning systems and networks in order to enhance New Zealand's capacity to innovate
 - Economic goal: Increase the contribution knowledge makes to the creation and value of new and improved products, processes, systems and services in order to enhance the competitiveness of New Zealand enterprises
 - Environmental goal: Increase knowledge of the environment and of the biological, physical, social, economic and cultural factors that affect it in order to establish and maintain a healthy environment that sustains nature and people.

While decisions on the detailed principles and criteria for articulating priorities have not yet been made, it is probable that science investment will focus on outcomes. In focusing on outcomes, the emphasis of policies and management practices will shift from rules to results, flexibility will increase, and the emphasis on tightly defined investment categories and pathways will diminish.

Fourteen outcomes have been developed, including²⁶:

- **Healthy, diverse, resilient ecosystems**
New Zealand has healthy, diverse and resilient living systems that sustain nature and people. We understand and value our ecosystems, are environmentally responsible and have assured the long-term quality and capacity of land, marine, freshwater and air resources.
- **Sustainable use of natural resources**
New Zealand understands the valuable contributions natural resources make to wealthy creation. Innovative and efficient methods are used to maximise the long-term value from these resources and sustain the ecosystems that support them.
- **Wealth-creating food and fibre industries**
New Zealand recognises that wealth creation from food and fibre resources requires consumer-oriented, value-added products, processes and services. These wealth-creating activities are built on innovative, efficient and sustainable use and development of these resources.

²⁶ MoRST (1999) *Blueprint for change - Government policies and procedures for its research, science and technology investment*. Ministry of Research, Science and Technology, Wellington.

- Science Priorities Review Panel report - *Priorities for 2001: Public Good Science Investment* - specifically mentions opportunities and obligations relating to UNCLOS (Law of the Sea).
- The draft *New Zealand Biodiversity Strategy* (1998) has been released by DoC and MfE as part of our obligations under the Convention on Biological Diversity (CBD)²⁷. The draft strategy has an explicit marine biodiversity chapter and states that in its “Agenda for Action” we must “manage the marine environment to sustain biodiversity”. The draft strategy recognises that this task cannot be left to central and local government. It suggests that iwi, farmers, fishers, foresters and rural and urban communities who manage natural resources must also become involved.
- *Sustainable Land Management Strategy* (MfE, 1996) - This strategy has as one of its priorities for action the agricultural impacts on aquatic ecosystems which include coastal waters. The strategy places the primary responsibility for achieving sustainable land management on individual land users.
- *Minerals Programme for Petroleum 1995, Minerals Programme for Minerals 1996 and Minerals Programme for Coal 1996* (Ministry of Commerce). One of the purposes of minerals programmes is to establish policies in respect of management of Crown owned minerals. The fundamental policy objective of these programmes is

“To allow continuing investment in prospecting, exploration and mining which is in accordance with good exploration and mining practice, always provided that there is efficient allocation of permits, the Crown obtains a fair financial return from the extraction of the petroleum, minerals or coal by a permit holder, and there is due regard to the principles of the Treaty of Waitangi”.
- National Agenda for Sustainable Water Management - this is currently under development by MfE. It includes coasts and estuaries, but most of the actions relate to freshwater.

At present there are no formal linkages between these various strategies and policies. Linkages appear to rely on the consultation processes that go on between government departments and stakeholders. Some strategies mention linkages with other documents and policies, but others do not.

3.4 International laws, conventions, agreements and other instruments

There is a range of international instruments with a bearing on aspects of New Zealand’s marine management, and of international bodies with responsibility or jurisdiction in various specialised areas.

²⁷ See, for example, de Fontaubert *et al* (1996) *Biodiversity in the Seas - Implementing the Convention on Biological Diversity in Marine and Coastal Habitats*, IUCN Environmental Policy and Law Paper No. 32, A Marine Conservation and Development Report, IUCN Gland and Cambridge.

New Zealand is party to a range of marine-related Conventions²⁸. Those agreements place wide-ranging, legally binding obligations on our Government²⁹. Obligations vary across a range of activities including conservation, sustainability, monitoring, and conducting research.

MFAT maintains a register of these obligations, and provides advice on New Zealand's responsibilities under the Conventions³⁰. Other agencies also have responsibilities under these instruments. The domestic responsibilities relating to these instruments are allocated to the relevant New Zealand government agency. This can mean it is sometimes difficult to ensure that New Zealand responds in a fully coherent and optimal way to the complexity of international challenges of marine management.

The most significant Conventions and agreements affecting the management of New Zealand's marine environment are listed below³¹:

- The *United Nations Convention on the Law of the Sea (UNCLOS)* – ratified by New Zealand in 1996 this comprehensive treaty codifying the law of the sea recognises, amongst other things, sovereignty over 12 nautical miles of territorial sea, and sovereign rights over the resources in the EEZ and on the continental shelf. It imposes obligations on states to protect and preserve the marine environment to the defined limit of its continental shelf.

Under this convention, New Zealand may gain exclusive rights to explore and exploit mineral resources of the continental shelf beyond the EEZ (but no further rights to fisheries resources). The convention requires New Zealand to define the outer limits of its continental shelf and submit its claim by 2006.

- The *International Convention for the Prevention of Pollution from Ships 1973/78 (MARPOL)* - The legislation necessary to enable New Zealand to become a party to MARPOL was passed in 1998 and MARPOL is now binding in New Zealand. The annexes are prevention of pollution: by oil (I); by harmful substances carried by sea in packaged form (III); by sewage from ships (IV); by garbage from ships (V); and control of pollution by noxious liquid substances in bulk (II).

A further annex (Annex VI) considers air pollution from ships. This annex is not yet in force internationally. The IMO is developing a another annex regarding the disposal of ballast water. Regulations under the RMA and marine protection rules under the Maritime Transport Act have been developed to control discharges of pollutants specified under MARPOL.

- *Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal*. New Zealand ratified this in 1995. The convention aims to both reduce

²⁸ Note that Antarctic environmental management is not addressed in detail in this paper.

²⁹ The Legal Division of the Ministry of Foreign Affairs and Trade maintains and publishes indexes of New Zealand's binding international obligations: see the "New Zealand Consolidated Treaty List" published by MFAT

³⁰ See for instance Ministry of Foreign Affairs and Trade (1994) *International Environment Issues - A New Zealand Perspective*, Ministry of Foreign Affairs and Trade, Wellington.

³¹ Several international agreements that relate to ship safety are not detailed here - many of these are the responsibility of the MSA.

the amount of waste being produced by signatories and regulate the international traffic in hazardous wastes (especially to developing countries).

- The *Convention on the Prevention of Marine Pollution by Dumping³² of Wastes and Other Matter 1972* (the London Convention). Ratified and implemented initially by the Marine Pollution Act 1974³³. The MTA rules and RMA regulations that enable New Zealand to implement the 1996 Protocol to the London Convention came into force in 1998.
- The *Convention on Biological Diversity* (CBD). New Zealand has signed and ratified this convention and is currently developing its Biodiversity Strategy (see above). The CBD requires New Zealand, as a party, *inter alia*, to take action to protect components of coastal and marine biodiversity within its jurisdiction. It also requires co-operation to achieve conservation and sustainable use of biodiversity outside its national jurisdictions, on the high seas and on the deep sea bed.
- *The Commission on Sustainable Development* (CSD) was established by the UN General Assembly after the Rio Earth Summit (1992). Chapter 17 of Agenda 21 addresses high seas fishing issues, sustainable use and conservation of marine living resources, and the sustainable development of small islands. CSD provides political impetus and an institutional focal point for the implementation of Agenda 21, co-ordinates and catalyses action on issues related to sustainable development; and provides a forward-looking forum for emerging sustainable development issues.

The New Zealand Minister for the Environment was the Chair of the Seventh Meeting of the CSD in 1999. Oceans and seas was the main theme of CSD VII. The need for improved co-ordination and co-operation in the way the UN system deals with the Oceans was a focus of the meeting. An outcome of the meeting was that the CSD recommended that “an open-ended informal consultation process” be established to provide focus for the General Assembly’s annual debate on Oceans and to provide a genuine impetus for improved inter-agency co-ordination.

- *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region 1986* (SPREP). New Zealand ratified this Convention in 1990. It provides for the control and prevention of marine pollution in the South Pacific region and has Protocols on Combating Pollution Emergencies and Prevention of Pollution by Dumping.
- *International Convention on the Regulation of Whaling 1946* (ICWR). New Zealand ratified this Convention in 1949. It provides for the regulation of whaling activities. A moratorium on commercial whaling has been in place since 1982.
- *UN Convention on the Management of High Seas Migratory Fishes and Straddling Stocks*. New Zealand has signed but not ratified this agreement. The Government has approved ratification and legislation (amending the Fisheries Act) which will implement this is being drafted. The legislation necessary to enable New Zealand to become party to this

³² Dumping is the deliberate disposal of waste carried on board for the purpose of disposal. It does not include operational discharges, such as sewage, which are addressed by MARPOL

³³ The Marine Pollution Act 1974 was repealed on 20 August 1998 and was replaced by the Maritime Transport Act 1994.

Convention is under preparation. Ratification will oblige New Zealand to protect biodiversity in the marine environment, apply the precautionary approach, take into account the interests of artisanal and subsistence fishers etc. The Agreement provides for implementation through regional management arrangements. It gives participating states strong enforcement powers.

- *Convention for the Conservation of Southern Bluefin Tuna (CCSBT)*. New Zealand has signed and ratified this Convention. The objective of the Convention is to ensure, through appropriate management, the conservation and optimum utilisation of southern bluefin tuna.
- *Convention on the Prohibition of Fishing with Long Drift Nets in the South Pacific (Wellington Convention)*. New Zealand ratified this in 1991. It bans the use of driftnets over 2.5 kilometres long in the South Pacific.
- *Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)*. New Zealand has signed and ratified this convention. The Convention's objective is to safeguard the environment and protect the integrity of the ecosystems of the seas surrounding Antarctica, and to conserve Antarctic marine living resources. The Government has recently expressed concerns about the illegal and unregulated fishing of Patagonian toothfish in the Southern Ocean.
- *The Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention)*. New Zealand ratified the Convention in 1984. New Zealand has five sites listed as wetlands of importance under the Convention.
- *UN Global Action Plan on Marine Pollution from Land Based Sources*. New Zealand contributed to the development of this Plan. Its prime focus is on regional seas initiatives, such as those promoted by the South Pacific Regional Environmental Programme. It also led to a process which may culminate in a convention controlling the use of persistent organic pollutants.
- Australian and New Zealand Environment and Conservation Council (ANZECC) - *Working together to reduce impacts from shipping operations: ANZECC strategy to protect the marine environment 1996*.³⁴ The strategy hooks into MARPOL and provides useful background research for future policy work as well as a framework for current work programmes in several areas. MfE and MSA are working together on several strands of work related to the Strategy.

3.5 Science, information and knowledge

3.5.1 Background

The sustainable management and protection of our marine resources is demanding of specialised technology and logistics, and the costs of operating in the marine environment are

³⁴ See the document *Working together to reduce impacts from shipping operations: ANZECC strategy to protect the marine environment*, ANZECC, 1997.

high. Our knowledge of marine ecosystems and the impact of human activities on those ecosystems is limited. In many cases we don't even know what we don't know, but in other areas we have enough data to make sensible marine management decisions.

What we do know is that less than 1% of New Zealand's marine area has been surveyed to assess the diversity of marine ecosystems within it. There are critical shortfalls in fisheries data – for example, we do not have enough information to judge whether harvesting is sustainable for over half of the fish stocks managed under the Quota Management System. We know little about the impacts that human activities are having on marine biodiversity. In short, as the *State of New Zealand's Environment*³⁵ notes “the status of marine ecosystems is unknown”.

National demands for marine science are highly varied and occasionally conflicting - coming from areas such as: strategic and defence needs; coastal management; marine reserves; recreation and tourism; local government; marine safety; education; information management; ocean and inshore fisheries; aquaculture; and energy and mining. The variety of demands is important – because off-shore research is so expensive, research users will often benefit from sharing a research vessel, or other equipment, technology or skills. Co-ordination of research projects is therefore essential. In 1999, MoRST estimated that the total funding pool for marine science and technology is \$96 million. The PGSF contributes 33% to the total funding pool while MFish contributes 19% largely from a levy on the fishing industry. The industry also claims to spend a further 15% of the total on its own research³⁶. LINZ contributes 23% and DoC 8% (includes a conservation services levy of approximately \$1 million paid by the fishing industry). Ministry of Defence spends about \$2m on the marine component of the Defence Scientific Establishment. The major structural change in recent years has been the transfer of the bulk of the hydrographic work from NZDF to LINZ.

“Hard’ science is only one aspect of the data and information available to progress our understanding of the marine environment. Local and traditional knowledge and experience is another avenue from which to source information. The Seaviews Conference provided a forum for debating issues around local community and iwi involvement in marine management including restoration, data gathering and monitoring. Local initiatives include Beachcare groups and NBio (neighbourhood biology network). Examples were given of projects such as dune restoration. The importance of the capacity of these groups should not be underestimated and there is a need for an effective way of sharing success stories in order that projects can be replicated³⁷.

3.5.2 Science management

Separate agencies have roles in provision of policy advice, purchase (funding allocation) and provision (conduct) of research:

- the Ministry of Research, Science and Technology provides policy advice;

³⁵ MfE (1997) *The State of New Zealand's Environment*. Ministry for the Environment and GP Publications, Wellington, page 10:4.

³⁶ NZ Seafood Industry Foresight Strategy 1998

³⁷ For papers on community-based coastal management see, for instance, *Pacific Coasts and Ports '97* - Proceedings of the 13th Australasian Coastal and Ocean Engineering Conference, published by Centre for Advanced Engineering, University of Canterbury.

- the Foundation for Research, Science and Technology allocates funding for "public good science" (primarily through the Public Good Science Fund - PGSF) and provides alternative policy advice.
- nine Crown Research Institutes (CRIs) are Government-owned research companies. Universities, private sector-based research associations, trusts, private companies and individuals can also apply for research funding to do public good science.

In addition, policy agencies, especially MFish and DoC provide policy advice to their Ministers and purchase, on his/her behalf, research to support the Minister's decision-making responsibilities. Most fisheries research is funded by the fishing industry. A Conservation Services Levy is charged to the fishing industry to fund conservation services which are designed to minimise the impacts of fishing on other marine species.

To assist in the development of science priorities, the whole spectrum of potential science activity within the PGSF is currently divided into categories, or 17 Outputs, across which total funding was allocated.

The definition for Output 6: Fishing and Aquaculture Industries³⁸ is: *Science and technology contributing to innovative and efficient fishing and aquaculture industries, including science and technology oriented towards understanding and ameliorating the impacts of industry activities on the natural environment and on society.*

The definition for Output 16: Marine Environments, Climate and Atmosphere is: *Science and technology contributing to the understanding of marine and estuarine ecosystems, the climate and atmosphere, and to analysis and amelioration of the environmental impacts of social development and economic activities.*

Some funding in the marine environment has also been obtained from Output 14, Earth Resources and Processes.

3.5.3 The Foresight Project

The current science system is currently undergoing significant change through the "Foresight Project" led by the Ministry of Research, Science and Technology³⁹. This Project will guide the development of a new set of priorities for the Government's investment in research, science and technology to take effect in July 2000. Foresight involves imagining a desirable future, and elucidating strategies for creating that future.

Four goals have been identified which will assist targeting research, science and technology investment. The three that relate to the environment are:

- Innovation goal: Accelerate knowledge creation and the development of human capital, social capital, learning systems and networks in order to enhance New Zealand's capacity to innovate
- Economic goal: Increase the contribution knowledge makes to the creation and value of new and improved products, processes, systems and services in order to enhance the competitiveness of New Zealand enterprises

³⁸ From FRST's Website: www.frst.govt.nz.

³⁹ This information has been taken largely from MoRST's website (www.morst.govt.nz/foresight).

- Environmental goal: Increase knowledge of the environment and of the biological, physical, social, economic and cultural factors that affect it in order to establish and maintain a healthy environment that sustains nature and people.

While decisions on the detailed principles and criteria for articulating priorities have not yet been made, it is probable that science investment will focus on outcomes. In focusing on outcomes, the emphasis of policies and management practices will shift from rules to results, flexibility will increase, and the emphasis on tightly defined investment categories and pathways will diminish.

Fourteen outcomes have been developed, including⁴⁰:

- **Healthy, diverse, resilient ecosystems**
New Zealand has healthy, diverse and resilient living systems that sustain nature and people. We understand and value our ecosystems, are environmentally responsible and have assured the long-term quality and capacity of land, marine, freshwater and air resources.
- **Sustainable use of natural resources**
New Zealand understands the valuable contributions natural resources make to wealthy creation. Innovative and efficient methods are used to maximise the long-term value from these resources and sustain the ecosystems that support them.
- **Wealth-creating food and fibre industries**
New Zealand recognises that wealth creation from food and fibre resources requires consumer-oriented, value-added products, processes and services. These wealth-creating activities are built on innovative, efficient and sustainable use and development of these resources.

Further work will involve FRST developing output profiles for the next five years to 2003/04. By August 1999 the FRST expects to have developed strategic portfolio outlines (SPOs) which will provide the framework for portfolio negotiation and contracting. In August, existing FRST work, and associated funding, will be mapped over to strategic portfolio outlines. Any changes in the Government's investment priorities will be reflected at this stage.

Negotiation of portfolios is expected to get underway in September 1999.

3.5.4 Research vessel committee

Because off-shore research is so expensive, research users will often benefit from sharing a research vessel, or other equipment, technology or skills. Co-ordination of research projects is therefore essential. The Ministry of Research, Science, and Technology has set up a committee on research vessel needs.

On the recommendation of MoRST, Cabinet chose an independent chair: Dr Ron Heath, the Assistant Vice Chancellor at Otago University. The terms of reference of this Committee are:

⁴⁰ MoRST (1999) *Blueprint for change - Government policies and procedures for its research, science and technology investment*. Ministry of Research, Science and Technology, Wellington..

- “To facilitate and co-ordinate access to marine research vessels through consultative mechanisms and regular information exchanges that ensure cost effective and equitable access to Crown-owned research and hydrographic vessels.
- To ensure that available sea days surplus to essential department or institutional output requirements are used optimally
- To identify strategic matters relating to New Zealand’s requirements for the provision of sea-going capabilities for New Zealand marine science and EEZ management, and on the use and replacement of research vessels.”