CONSERVATION
TE PAPA ATAWHAI

SCIENCE & RESEARCH SERIES N0.53

AN EVALUATION FRAMEWORK FOR THE NEW ZEALAND COASTAL POLICY STATEMENT

SCIENCE & RESEARCH SERIES NO. 53

AN EVALUATION FRAMEWORK FOR THE NEW ZEALAND COASTAL POLICY STATEMENT

by
A.D. Meister and D.J. Rosier

CONSERVATION
TE PAPA ATAWHAI

Published by Head Office, Department of Conservation,
P.O. Box 10-420, Wellington, New Zealand

RM COAST
SUSTAINING OUR COAST
RONGOATIA TE TAI

ISSN 0113-3713
ISBN 0-478-01437-6

This publication originated from Department of Conservation Contract Investigation No.S947, July 1992, and was approved for publication by the Director, Science Research Division, Department of Conservation, Wellington.

National Library of New Zealand
Cataloguing-in-Publication data

Meister, A.D. (Anton Diederik), 1944-
An evaluation framework for the New Zealand Coastal Policy Statement / by A.D. Meister and D.J. Rosier. Wellington, N.Z. : Head Office, Dept. of Conservation, c1992
1 v. (Science & research series, 0113-3713 ; no. 53)
Includes bibliographical references.
ISBN 0-478-01437-6
1. Coastal zone management--Government policy--New Zealand. 2. Coastal zone management--New Zealand--Planning. 3. Coastal zone management--New Zealand – Evaluation. I. Rosier, D. J. II. New Zealand Dept. of Conservation. Title. IV. Series: Science & research series ; no. 53.

333.917160993

Keywords: coastal zones, management, policy, environment, values, topic evaluation, cost benefit analysis, regulation, economic efficiency, equity

CONTENTS

FOREWORD v
ABSTRACT 1

1. **INTRODUCTION** 2
   - **1.1 Attributes** 2
   - **1.2 Values** 3
     - 1.2.1 Consumptive use 3
     - 1.2.2 Non-consumptive use 3
     - 1.2.3 Non-use values 3
     - 1.2.4 Intrinsic values 4
   - **1.3 Natural resource characteristics** 4
     - 1.3.1 Excludability 5
     - 1.3.2 Divisibility 5
     - 1.3.3 Externalities 6
   - **1.4 Planning and administrative frameworks** 7
   - **1.5 Environmental limits** 11
   - **1.6 Conclusion** 11

2. **EVALUATION FRAMEWORK** 12
   - **2.1 Introduction** 12
   - **2.2 Evaluation** 13
   - **2.3 Evaluation within the planning process** 13
     - 2.3.1 Topic Evaluation Composite evaluation 14
     - 2.3.3 Minimum requirements approach 14
     - 2.3.4 Cost-benefit analysis 14
     - 2.3.5 Planning balance sheet 14
     - 2.3.6 Goals achievement matrix 14
   - **2.4 Ex-post evaluation** 16

3. **SECTION 32 REQUIREMENTS** 17
   - **3.1 Means of implementing policy** 18
   - **3.2 Legislation or prescriptive law** 20
   - **3.3 Reactive planning** 21
   - **3.4 Provision of information** 21
   - **3.5 Provision of services** 22
   - **3.6 Incentives** 22
   - **3.7 Levelling of charges** 23
   - **3.8 Property rights** 24

4. **EVALUATION CRITERIA** 25
   - **4.1 Economic efficiency** 25
   - **4.2 Equity/Fairness** 27
   - **4.3 Administrative efficacy** 28
   - **4.4 Systems approach** 28
   - **4.5 Prevention of pollution at source** 28
   - **4.6 Treaty of Waitangi** 29

5. CHOICE OF EVALUATION TECHNIQUES 29

6. EXAMPLES OF EVALUATION OF POLICY GROUPINGS 30
EXAMPLE 1
Section. Maintenance and enhancement of the quality of the environment
EXAMPLE 2
Section. Maintenance and enhancement of public access

7. CONCLUSIONS 34

8. REFERENCES.....35

FOREWORD

The Resource Management Act 1991 requires the Minister of Conservation to prepare a New Zealand Coastal Policy Statement to promote sustainable management of the natural and physical resources of the coastal environment of New Zealand. Before adopting any policies the Minister must be satisfied that the policies are necessary and that they are the most appropriate means of achieving the purpose of the New Zealand Coastal Policy Statement. In determining whether the policies are the most appropriate means, regard must be had to their efficiency and effectiveness. These requirements are detailed in Section 32 of the Act.

Section 32 is one of the parts of the Act which have no precedent, and no substantive research on its application has been published elsewhere. Fundamental difficulties faced by the Department in preparing the draft policy statement included how the policies were to be assessed prior to their implementation, the criteria to be used, and the degree to which quantitative analyses of policies should be undertaken.

When it became apparent that a provision such as Section 32 might be included in the Resource Management Act 1991, Anton Meister and Johanna Rosier, lecturers at Massey University, obtained a research grant from this Department. The research required an assessment of evaluation techniques which could be used to undertake an analysis of the New Zealand Coastal Policy Statement in accordance with Section 32. The research was funded and administered separately from the team preparing the New Zealand Coastal Policy Statement. This helped maintain the independence of the research. At the same time the researchers consulted with the coastal policy team and were aware of the range of policies under consideration.

Anton Meister and Johanna Rosier are two of New Zealand's foremost researchers in environmental economics and coastal planning respectively. The combination of their skills in this research project has resulted in a useful development of applied evaluation research for New Zealand and the international community.

In reading this report it is essential to understand that while the research described in it has made a very important contribution to the process of developing the draft New Zealand Coastal Policy Statement this is <u>not</u> an evaluation of the New Zealand Coastal Policy Statement. Nor is it a description of such an evaluation. A full report on the evaluation of the Draft New Zealand Coastal Policy Statement has been released by the Department as a separate publication. Meister and Rosier's work assisted the policy team to determine which evaluation framework was most appropriate for the evaluation of the Draft New Zealand Coastal Policy Statement.

The Draft New Zealand Coastal Policy Statement has been notified. Public submissions are being sought by an independent Board of Inquiry. The Board will make recommendations to the Minister of Conservation. Any changes which the Board recommends be made to the policy will require a further section 32 analysis. Other changes which Cabinet may seek will also be subject to a section 32 analysis. The Department intends to draw on Meister and Rosier's framework for guidance in choosing appropriate evaluation frameworks.

The Department and the researchers would therefore welcome any comments people may wish to make on this report. These should be addressed to:

The Manager, Coastal Section
Department of Conservation
PO Box 10-420
WELLINGTON

Alan Edmonds
Deputy Director-General
for Director-General

AN EVALUATION FRAMEWORK FOR THE NEW ZEALAND COASTAL POLICY STATEMENT

by
A.D Meister[1] and D.J. Rosier[2]

[1]Department of Agricultural Economics and Business, and
[2] Department of Geography, Massey University, Palmerston North, New Zealand

ABSTRACT

This report explains the role of the New Zealand Coastal Policy Statement (NZCPS) in ensuring sustainable management of the distinctive attributes of all coastal zones. New Zealand's coastal environment, and the use made of it, reflect many values. These values include both consumptive or non- consumptive values and non-use. Intrinsic values are also important. These should all be reflected in a coastal policy statement. How they should be recognised is unclear.

One of the principle alternative approaches to achieving sustainable management is more effective use of the market system. To assess the applicability of this approach in the coastal environment requires an understanding of resource characteristics, including concepts of excludability and divisibility. The International Union for Conservation of Nature and countries concerned at the degree of destruction or degradation of their coastal environments have acknowledged the need for national policies to avoid the adverse effects and mitigate conflict between human activities in the coastal zone. This report discusses the function of a NZCPS in guiding regional planning to achieve sustainable management of the coastal environment.

The development of an ex-ante evaluation framework to analyse the success of the NZCPS in achieving sustainable development of the coast's physical and natural resources, is affected by the type of evaluation method used. This report analyses the suitability of several methods, including: topic evaluation, cost benefit analysis, and planning balance sheet. Also of importance are the potential means or methods (e.g., regulation, provision of information and services) available to deal with individual issues in the coastal zone, and the criteria by which the means are evaluated (e.g., economic efficiency, equity, administrative efficacy). The report recommends that the most suitable method for analyzing the NZCPS is topic evaluation, and it also provides two examples of evaluating the various means available to deal with specific coastal issues.

1. INTRODUCTION

The main purpose of this report is to develop a framework for a Section 32 evaluation of the New Zealand Coastal Policy Statement (NZCPS). Initially the distinctive attributes of the coastal zone and the diversity of values (e.g., consumptive use) which need to be accommodated are discussed. The issues raised explain the role of the NZCPS in an integrated approach to sustainable management of coastal resources.

Later sections of the report assess the suitability of various evaluation methods which form the basic framework, and discuss the evaluation criteria and their applicability in dealing with coastal issues.

1.1 Attributes

- There are the distinctive attributes of the New Zealand coastal zone itself which have been documented over many years in various workshops. Those attributes may be summarised as follows:

- The coastline, itself, is truly a finite natural resource.

- NZ coastal ecosystems are unique, with a great diversity of natural habitats, which are sensitive to the effects of human activities. The coastal ecological systems are also complex and dynamic; hence effects from local human activities are likely to affect other parts of the system, especially those parts directly affected by the hydraulic action of the coastal water body.

- There are large variations in the types of coastline, the scale of human use of the coast and the problems and issues generated by that use. A NZCPS would ensure a consistent approach to the management of human use of the New Zealand coast.

- Public interest in the coast is high. Therefore there is a need to provide public access to the coast. There will be competition between human activities for the use of coastal resources. Evaluation of what is appropriate human use would need to deal with ecological, cultural, economic and social considerations.

- Environmental limits to human use of the New Zealand coast do exist. These will vary depending on the type of coastline, the sensitivity of local ecosystems, and the reversibility of the effects of human activities.

- Some human activities in the coastal zone may irreversibly affect coastal

  resources. Criteria are required by which these uses may be evaluated, both in terms of their need to be located in the coastal Zone and the possibilities of ameliorating the effects, if development is to be sustainable.

- Issues about the use of coastal resources and the effects of human use transcend jurisdictional or administrative boundaries. Coastal problems and issues are usually complex and insidious, requiring long term management which extends beyond the short political time frames.

While the market system may successfully deal with some aspects of allocation of human activities in the coastal zone, there are reasons why the market fails as the ONLY mechanism to regulate human use of the coast. These reasons relate to the wider values (anthropocentric and non-anthropocentric) associated with resources in the coastal zone, as well as the characteristics of the coast as a common property resource. In what follows, these two reasons are explained in more detail, leading to the conclusion that a national coastal zone policy is essential if resources in the coastal area are to be allocated sustainably and to the maximum social, economic, and cultural well-being of society.

1.2 Values

The focus of most discussions about natural resources are anthropocentric in that they are concerned with human welfare. Humanity arguably has custody and not ownership of the earth, and although considerations may be due to all living organisms, the sense of well-being which dominates our conceptual framework is that for humanity and its progeny (the concern for future generations as expressed in the purposes of the Resource Management Act). In that framework we recognise three sets of values:
(1) consumptive use values; (2) non-consumptive use values; and **(3)** non-use values.

1.2.1 Consumptive use values involve physical use of the environment. Fishing and duck hunting are good examples. When future use is uncertain, economists refer to **option value** as the extra amount (an insurance premium, if you will) that a person is willing to pay to eliminate the risk of a future opportunity not being available. Even if people are uncertain about whether they will ever go fishing for a particular species, they might value the option to protect its breeding habitat. This amount is in addition to the **expected value** of future use (here, expected value refers to the utility from future use times the probability that they will actually use the resource). This is distinguished from **present value** since even expected use is a future value. To obtain a present value for this future value, one needs to discount expected use value. **Option price** is defined as the expected value of future consumption plus option value. The uncertainty applies to uncertainty in supply as well as demand.

1.2.2 Non-consumptive use involves being at the site but not actually harvesting any resource. There are many possible examples of non-consumptive uses of coastal resources including for example, canoeing, swimming, photography and scuba diving. In a sense, the experience itself, as opposed to the physical object, is being consumed. Option value and option price are defined for future, non-consumptive uses also.

1.2.3 Non-use values, or what economists call **existence values,** concern one's maximum willingness to pay to preserve the environment for use by future generations **(bequest values)** and for wildlife **(preservation value).** These concepts are well-defined for those who base their maximum willingness to pay

on the personal satisfaction that they receive from making bequests or preserving wildlife and whose preference structures for income and these goals are mapped by indifference curves.

1.2.4 Intrinsic values There is, however, another set of values. These are called **intrinsic values** and do not pertain to the human use of the resources (i.e., they are non-anthropocentric). These are values that reside in things such as animals, ecosystems or non-organic resources and which are unrelated to current human use or future human use of these resources and systems. Economists claim that some part of these values are captured in existence values. Intrinsic values are recognised in the Environment Act, the Conservation Act and the Resource Management Act. The rationale underlying these values are altruism, or rights or a stewardship motive.

Goods and services in private markets have their worth verified by individuals' acts of purchasing; but this is a highly uncertain yardstick for those goods and services, such as parks and the coastline, which offer wide benefits whether or not payment is made for them. Such jointly used goods, where there are difficulties in blocking access to users not contributing to their provision, are called non-excludable or collective goods (explained below in 1.3). The joint usage of many environmental services by a large number of people often makes it difficult to ensure that individual decisions embody the full consideration of environmental attributes. Where benefits of environmental amenities must inevitably be widely shared, disaggregated and individualistic market mechanisms may not always reveal their true worth. Because people will automatically obtain those benefits, they have strong incentives not to outlay their personal resources to obtain that access. In many cases this calls for a more intrusive role for government than that of simply holding the ring in which transactions freely take place.

In the market there is no opportunity to reflect these wider values, again because it is sometimes impossible or undesirable to give people or a group of people a property right to a resource or asset (non-exclusive or indivisible). When it is possible to make the resource exclusive (e.g., an indigenous forest) then interested groups could buy the forest (the price reflecting their non-consumptive use, option and existence values) and preserve it for ever. This has happened several times overseas.

If then these values are not reflected in the market, they need to be recognised by other means, so that in decisions regarding the use (or non-use) of these resources, all benefits and costs are included. Again, the presence of these values provides additional support for a national policy statement. It does not indicate how this recognition should take place -through government intervention (such as regulation and laws), through market instruments or by other means.

1.3 Natural resource characteristics

There are two resource characteristics and one major set of consequences that require the correction of the market system when allocating the resources or managing human uses. The characteristics are excludability and divisibility and the consequences are externalities.

1.3.1 Excludability Some resources have a 'non-excludability' characteristics, resources for which there is a difficulty in blocking access to leave those not contributing to their provision. The reasons for this may be cultural precedents, political or other properties of the resource. For example, governments might consider it unconstitutional to exclude the public from beaches. In addition, the migratory habit of some species of fish make it impossible to establish individual property rights that would exclude other firms and the public from the resource. The natural characteristics of the coast are available to all and no-one can be excluded. Resources that have this kind of characteristic are called either open-access or common property resources.

Open-access means that no one owns the resource and access is open to all. There are no limits on entrants. Examples are the sea, the air, and the atmosphere.

Common-property means that the property is owned by some defined group of people -a community, a nation. It is possible that within this group of people there will be open access, i.e., each individual member of the group will be permitted to make whatever use they wish of the resource.

The typical allocative results of non-exclusiveness, which are all relative to the socially optimal level (Randall 1987)are the under-provision of a good, service or amenity; over-exploitation of a resource; and under-investment in the management, conservation, and productive capacity of a resource.

However, as experience has shown with, for example, some common property resources, the 'group' will develop rules of use, limiting the use that any one individual is allowed to make of the resource. The reasons such rules emerge is that unconstrained use by each individual is more likely to lead to resource extinction or destruction, thus damaging the welfare of everyone and perhaps imposing an irreversible cost on future generations. For coastal zone management (CZM) policy to be successful, the traditional users must be convinced that there is a problem that the system on which they depend is suffering or is likely to suffer abuse, and that planning will protect their interests in the long term (Hildebrand 1989).

1.3.2 Divisibility Divisibility in final use concerns whether the resource can be subdivided such that each individual who is willing to pay for it can exclude all others from its benefits.

As indicated above, the sea is an open-access resource and therefore anyone can go and catch fish (unless constrained to do so) or gather shellfish. No-one can be excluded unless society has set rules that indicate otherwise. However, the divisibility of the fish facilitates ownership once they are harvested. With the institutional change to individual transferable quotas and other regulations, many of these open-access resource situations have been transformed to private and semi-private markets.

Groundwater is another open access resource, characterised by **non-exclusive** property rights and **divisibility**.

Conversely, there are a number of coastal resources that are **exclusive** and, therefore, amenable to pricing but which are **indivisible**. For example, in many parts of the world, access to bays and estuaries, dive sites, and areas frequented by endangered whales is provided by firms although use of these environments by humans and whales is indivisible since one person's use does not preclude use by others. In many cases, governments somewhat privatise coastal resources such as state beaches by charging entrance fees. Indeed, many communities exclude non-residents from local beaches through various parking and pricing mechanisms. Regardless, a public beach is not partitioned such that my use precludes yours (strictly speaking, my use of a specific spot precludes yours, but this is temporary).

Finally other coastal resources are both non-exclusive and indivisible. Sometimes referred to as pure 'public goods', these include scenic views, large wetlands, clean air and water (in a general sense), the survival of endangered species and recreational sites where access and legal use are uncontrolled.

Indivisibility in use (or joint consumption) is, clearly, a physical attribute of the good (or resource) itself. It is not simply the result of an institutional choice, as exclusiveness may be. Sometimes non-excludable and private goods are mixed together. Take, for example, a privately-owned seashore property with a majestic bluff. As a private good, the property is subject to being altered through market processes, it could be built on. At the same time, however, the general public enjoys the scenic vista as a non-excludable good. All can enjoy it without reducing its scenic value and no-one need be excluded. There is, therefore, in this case a private and a public demand curve but until there is an ability on the part of the collective population to pay, no real demand curve for the scenic view exists. On the other hand there is a real demand curve established for the private good and this will operate to allocate the resource in the market. To prevent the destruction of the scenic view, the population would have to possess a property interest in the resource (through the acquisition of development rights by government or private conservation groups, for instance) or there would have to be public regulation where a legitimate public interest has been found (Edwards 1987).

The above examples clearly show that resources that have non-excludability properties could be exploited and degraded through use or even destroyed. Resources with indivisibility characteristics have values that cannot be captured by the market system and can lead to wrong decisions regarding these resources. It is our contention that the coastal zone area in particular is typified by having resources that display the above characteristics. At the same time the coastal environment is a fragile environment where mistakes in management can have long-lasting and sometimes, irreversible effects (which are externalities).

1.3.3 Externalities The characteristics of some of the resources in the coastal area can lead to undesirable results in terms of optimal resource allocation and management and can result in destruction or degradation of the resource. This occurs when people use the open-access characteristic of resources, and when private individuals cannot capture the value of some of the indivisible characteristics of a

resource (wetland values, scenic view) and destroys the resources for another, lower-valued (to society) use.

We are talking here about what would happen, given the characteristics of the resources and given that society has not put into place policies (with associated instruments to implement them) to assure that this doesn't happen. Figure 1 illustrates examples of conflicts that occur between activities, mainly because of the effects of individual activities on others utilising the same resource. In such situations there is little incentive for those involved in, say, aquaculture to consider its impacts on recreation, or for farmers to consider the impacts of agricultural practices on coastal zone water quality, or for environmentalists to consider the impact their demands for preservation are having on the commercial viability of industrial or agricultural practices, unless required to do so by government policy or regulations.

1.4 Planning and administrative frameworks

(As recommended in international forums and developed in other countries)

The previous discussion has developed the reasons why an unfettered market system, applied to the coastal zone area, will lead to use of coastal resources which, in terms of social well-being, will be unsustainable and/or suboptimal. This problem is recognised worldwide. For example, the IUCN (1980, 1991) has identified coastal waters and wetlands as areas among other priority areas, requiring action by nations. After highlighting the main issues (among which has been the inability of many governments to manage coastal resources sustainably in the past), the IUCN (1991) recommends that each country develops a national CZM policy as a priority action. It recommends that national policies establish a mechanism to coordinate planning and allocation of uses on the coast, provide a means of reviewing the benefits and effects of various activities, set procedures for dealing with issues such as shoreline instability and rise, reduce marine pollution from land sources, and provide for cooperative action about shared use of the ocean. The IUCN envisages that a national policy would form part of an integrated management programme to coordinate sectors of development (Figure 2) and to be effective, the office should be at Cabinet level. It also recommends that local communities be involved in managing resources. However, it emphasises that their capacity to manage varies considerably with different economic and social circumstances.

Sorensen (1991) recommended that UNCED ratify an integrated approach to coastal management as a major output of the Earth Summit. The proposed approach is comprehensive and amongst many recommendations is the key requirement that there should be a government department or arrangement to establish policies for making allocation decisions about human use of the coastal zone (Knecht 1991).

CZM is also an issue in OECD countries, where the costs of cleaning up past mistakes is prohibitive and governments are focusing on integrated coastal management as a means of avoiding further environmental degradation. Environmental protection goals are being integrated into commercial and industrial decision-making processes to ensure that the best use is made of the coastal zone as a whole (OECD 1988). At an

USES AND THEIR CHARACTERISTICS	SOME EXTERNALITIES/EFFECTS
Excludability (estuary or ocean used as on open resources)	
• Sewerage effluent discharge	Bacterial contamination of water/shellfish; sedimentation; increased plant growth.
• Storm water runoff and drainage	Deposition of oil and heavy metals
• Agricultural runoff and effluent disposal	Chemical changes, bacterial contamination; sedimentation; increased plant growth
Indivisibility	
• Subdivision of foreshore	Public access precluded; dune geomorphology altered
• Construction of buildings/structures	May not fit 'character' of coast; obstruction of views 'of' and 'from' coast; natural character affected if structures are above tree line and dominate the landscape or if vegetation is removed; increased erosion of primary dunes; flooding behind dunes; overshadowing of beach area; aesthetic values affected; wave and current patterns may alter; increased opportunity for conflict between uses.
• Construction of offshore structures (e.g., floating restaurants, navigation structures and recreation facilities) marinas, ports	
• Drainage of wetlands	Species/habitat loss; breeding grounds lost (future fisheries affected); species diversity reduced; public good (species preservation) affected
• Reclamation	Sedimentation; shellfish beds affected; wave and current patterns affected
• Grazing of dunes	Erosion of dunes, aesthetic losses
• Rubbish tips in dunes	Erosion of dunes (blowouts), leaching of waste liquids into littoral zone.
• Commercial fishing	Loss of species, loss of species diversity
• Recreation	*Conflict between uses

* **Note:** There will be competition between human uses because of resource consumption by some groups; physical damage to resources; changes in water quality; pollution of air and water or because of different aesthetic opinions.

Figure 1 Examples of coastal uses: The characteristics and effects.

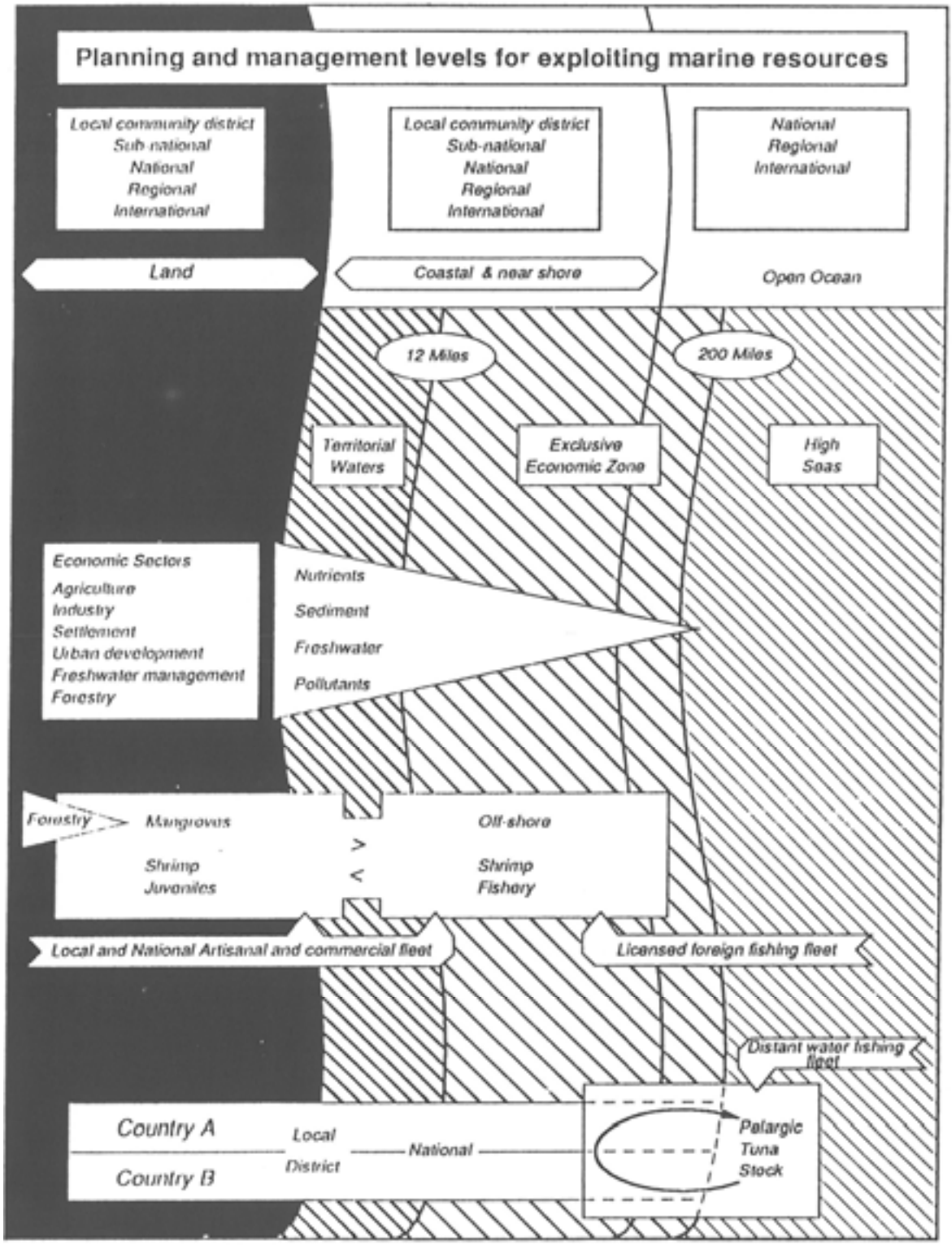

Figure 2 Planning and management levels for exploiting marine resources.
Source: IUCN (1991), p. 153

economic level it is advocated that integration be promoted by a mix of regulation, appropriate pricing of resources to ensure consideration of external costs in the allocation process and a property rights regime which internalises external costs.

While in the 1970's the emphasis was on formulating principles and general declarations of intentions, it is now clear that OECD countries must focus on concrete action plans and policy statements (Cahmis and Coccossis 1982). It is recognised that each country will have different means of achieving international objectives. The role of the OECD is to coordinate national effects.

The United States CZM programme initiated in 1972 is seen as a valuable tool in comprehensively managing use conflicts in the coastal zone (Burgess 1989, Walsh 1982, Fischer 1990). The main problems are the degree of federal funding required to keep the programme going and the lack of consensus about how diminishing coastal resources should be allocated between competing interests (something not addressed in the 1972 legislation). Canada identifies similar problems, but has opted for a regional (state) based programme, with the national level of government adopting a coordinating role (Hildebrand 1989).

The United Kingdom is criticised strongly for not having a national coastal policy (Jollife and 1985, 1986). Current management by local authorities has resulted in decisions being made which enable developers to externalise costs, affect neighbouring authorities, exacerbate allocation problems of mobile resources, such as fish and facilitate private interests at the cost of public interests.

The Australian government is reviewing the current arrangement in which the States control coastal management. The current approach is seen by many to fail because of a lack of national coordination of planning in the coastal zone and because scientists have not developed understanding about processes and the effects of human activities. Planners have been criticised because of their lack of vision and their emphasis on development control and building restrictions. The various approaches adopted by the States seem to depend on the amount of publicly owned land and the attitude to coastal erosion (Cullen 1987, Yapp 1986, Government of Victoria 1989, O'Brien 1988). The Australian Government has expressed its intention to prepare a national coastal policy statement based on integrated catchment management principles (Australian Water Resources Council 1988). That intention is reinforced in a recent report (Australian House of Representatives 1991) recommending that a national CZM strategy (similar to the US model) be developed with cooperation of states, territories and local government to coordinate coastal management throughout Australia. It is envisaged that the main roles for the Commonwealth will focus on the formulation of broad policy and the provision of an administrative framework for coordination of coastal management; research and information (involving development of a national database and sponsoring research); and resource support (funding technical assistance and training local conservation groups and local government officers to prepare joint plans).

The New Zealand coastal zone has been the topic of several seminars and workshops (Ministry of Transport 1980, Department of Lands and Survey 1984, DOC 1990).

Invariably one of the issues has been the national coordination of regional catchment management, a model which the Resource Management Act (1991) has generally adopted. It is envisaged that the role of a national coastal policy would be to state national priorities about the coast and to ensure consistency between regional policy statements where it is required to fulfil the purpose of the Act. Successful implementation of policies at all levels also requires a commitment from DOC to provide information about potential effects of human activities on the coast.

1.5 Environmental limits

A New Zealand Coastal Policy Statement is especially important in providing a framework for policies concerning the establishment of environmental limits. The type of policies and methods proposed to achieve the intent will depend on the nature of the resources in the coastal zone area, the degree of public interest and the interaction between user groups and their dependence on the coastal resources.

Option values and environmental limits are both concerned with the concept of risk and uncertainty. There is much uncertainty about the real value and workings of ecosystems in the coastal zone area. Wetlands and marine areas are very productive in terms of species and, as yet, society has only a small idea of their contribution to the whole coastal zone ecosystem and therefore to the nation. Given this lack of information and knowledge, the concept of option value tells us that people value keeping options open (i.e., wanting to avoid irreversible resource changes). With increased knowledge, new and very valuable benefits may be discovered from these resources.

Knowing that options values exist and knowing that the market institution will not capture these values should help in the formulation of policy. In terms of the purposes of the Act, one such policy may be to define environmental limits for the use of some of the resources in the coastal zone. These limits will not be based, in the first instance, on the possible benefits and costs of the action but on the uncertainty associated with the current use of resources -the desire to protect and safeguard the life-supporting capacity of these resources and ecosystems, and to meet the reasonably foreseeable needs of future generations.

Such policies and the monitoring of them at a national level becomes important in avoiding parochial decisions at a regional level which benefit only certain groups in the current generation.

1.6 Conclusion

In the foregoing sections, it has been shown that there is *primafacie* justification for a National Coastal Policy Statement. The policy would provide national guidance for an integrated approach to managing coastal zone, thus fulfilling our international obligations. It is also necessary to manage:

1. The interactions between rival activities where the effects of such activities are experienced on the coast

2. The use and development of coastal resources in recognition of the wider values (than simply used values) held by society

3. The use and non-use of coastal resources in light of the requirements for sustainability, the provision for future generations, and the presence of uncertainty, and

4. The protection of species and habitats of national and international significance.

Without such policy and management, it could be argued that sustainable and efficient resource use would not be achieved. Open-access resources may be exploited (e.g., the marine area, the foreshore) and use conflicts (externalities) may lead to lower benefits to society as a whole of the use of these resources. The natural coastal characteristics of the coast are not preserved because these characteristics are indivisible (and the resource may or may not be excludable). This then leads to a misallocation of resources, for the market mechanisms cannot deal with such situations (i.e., it fails), which has implications for the current and future generations.

A NZCPS would indicate recognition of the possibilities of such conflicts and of unsustainable uses. The statement would not automatically imply government intervention of a regulatory type (or government involvement at all). For intervention to be desirable, in what ever form, the benefits from intervention need to be compared with the costs. In terms of implementation, alternative ways of achieving ends need to be evaluated.

A NZCPS is also necessary to ensure that there is a consistent approach in regional and local plans to the consideration of environmental limits, analysis of interactions both within ecological systems and between human uses and ecological systems. There is also a national duty to ensure that the Treaty of Waitangi is recognised in all decision-making about the use of the coast. The government is also responsible for the economic and social well-being of people.

2. EVALUATION FRAMEWORK

2.1 Introduction

The basic reasons for a NZCPS are reiterated as an introduction to the evaluation framework.

The coastal zone (the beach, water, dunes, wetlands, etc.) is characterised by the aspects of non-rivalry in consumption and non-excludability in use. Although there is non-rivalry in consumption this may be so only up to a certain point; beyond that point, there is indeed rivalry. Recreation is an example of this. A protected or public area can be enjoyed by a number of people without one person's enjoyment being diminished by the action of another (e.g., a stretch of open beach). Beyond a certain point, however, congestion sets in and each person's enjoyment is reduced as more people use the area. Goods displaying this characteristic are know as **congestible goods.**

Non-excludable goods often involve **external effects** or **externalities** -that is, the production or use of a good or service by one person affects another person involuntarily without the benefits of compensation.

Because of the above characteristics and problems the market system alone generally fails to cope with external effects in allocating coastal resources and fails to deal with the wider values associated with the use (or non-use) of coastal resources (as explained in Part One). These failures of the market system clearly result in resource allocations that will not achieve the purposes of the Act.

For these reasons, governments have become involved through the development of coastal zone policies in overcoming some of the problems mentioned above and in allocating resources in an more optimal way (i.e., achieving the purposes of the Act). However, government involvement is not always the only way to achieve the purposes of the Act in the coastal zone. There are costs and benefits associated with the actions of government and governments themselves can, just as markets, also fail. Therefore it doesn't automatically follow that because of the presence of non-excludability and non-rivalry, government involvement is the best solution. In particular, it needs to be demonstrated that the benefits of government involvement exceed the costs. The most transparent of the costs involved are those of administration and policing. It is essential that the best way of overcoming the problems raised above can be found, firstly, by identifying all possible alternatives to achieve stated goals, and secondly, by evaluating those alternatives and means. It is these latter aspects that will be dealt with in the following sections.

2.2 Evaluation

With regard to policies, evaluation can be said to be the assessment of a policy's relevance, performance, efficiency and impact in the context of its stated objectives. While evaluation can occur ex-ante, mid-term and ex-post, for the purposes of this report we will be concerned mainly with ex-ante evaluation. The specific purpose here is to develop a framework for the evaluation of the NZCPS and individual policies. To achieve this, we will start off with a discussion of the techniques and criteria which may be used to form the basis of such an evaluation framework. The problems of evaluating the NZCPS specifically will be presented, followed by the evaluation of each main group of policies.

Evaluation is ideally carried out in two ways (Nachmias 1979). Firstly, alternative policies and plans, or the principal means considered appropriate to achieve aims and objectives, are evaluated within the planning process and the final acceptable option is derived. Secondly, the chosen plan/programme/policy is evaluated after a period of implementation to analyse its effectiveness.

2.3 Evaluation within the planning process

Types of evaluation techniques used within the planning process may be informal (topic evaluation, composite evaluation or the minimum requirements approach) or formal (cost benefit analysis (CBA), planning balance sheet (PBS) and goals

achievement matrix (GAM)). It may be concluded at the end of any evaluation, that the chosen option is one or a combination of options. Evaluation at this stage may often include an explicit evaluation of the cost and benefits of a particular policy and the trade-offs between conflicting objectives (CBA). Sometimes the impacts and possible conflicts are identified but not resolved (PBS, GAM). With regard to all these techniques it is important to remember that evaluation should not replace decision-making but simply support the process by ordering information and so facilitate the comparison of alternatives or evaluate a single option, policy or objective.

2.3.1 Topic evaluation Topic evaluation is an informal method of evaluation in which topics are taken separately and simply discussed in terms of 'pros and cons' and possible implications. The main emphasis is on the feasibility of implementing the policy. This method is very popular because of its simplicity. It is suited to situations where there is little knowledge about the specific implications of development. However, it may result in a negligence to consider marginal costs which are not evident until after implementation. Because the style of evaluation is mainly anecdotal, topic evaluation is criticised for lacking in rationality and scientific methodology (Hill 1985).

2.3.2 Composite evaluation Composite evaluation is also an informal method of evaluation. Two or more policy options are evaluated to determine which is the most feasible. Characteristics are not separated out but all characteristics are considered together. The main difference between this and topic evaluation is a question of the degree of scrutiny involved (Hill 1985). Most applications of composite evaluation are informal in that policies and policy instruments are listed and attention is paid to departures from existing policy and creation of new policy. Performance measures are related to goals as a starting point for continuous monitoring whereas formal methods of composite evaluation require a comparison between each policy option in terms of costs and benefits.

2.3.3 Minimum requirements approach The minimum requirements approach to evaluation is used to make decisions in situations where multiple-interest groups are seeking multiple and conflicting objectives. For this type of evaluation to be effective, there must be an understanding of the requirements of each interest-group involved in the evaluation, criteria must be weighted and there must be sharing of information and reasoned dialogue between groups. The result is compromise or satisfying of most interest-group objectives (Hill 1985). It also faces problems of acceptance by professional planners who perceive that they are able to balance the views of the different interest groups. Future generations and species are often disadvantaged in this type of evaluation because of the focus on current interest groups.

2.3.4 Cost-benefit analysis Cost-benefit analysis not only identifies and measures the impacts of policies in terms of benefits and costs (i.e., the negative and positive effects expressed in monetary terms) but also provides a criterion by which to judge the desirability of the policy in light of the objectives set. For 'conventional' CBA this means using the single objective of economic efficiency (i.e., a policy is desirable if the discounted benefits are greater than the discounted costs). For 'social CBA' or

'extended CBA' the objective function now also includes impacts on the distribution of income and the environment (Hufschmidt 1983, Meister 1990a).

CBA, like PBS and GAM, provides a formal framework for organising all of the benefits and costs associated with programmes, policies or rules. The framework takes a very diverse set of information about different types of benefits and costs and converts this multidimensional information into a set with a smaller number of dimensions. This allows the decision-maker to concentrate on the relative importance of the benefits and costs (those quantified and not quantified, but identified) (Meister 1990b). The framework also helps to identify the gaps in knowledge regarding the monetary and monetary impacts of the policy being evaluated.

CBA, as most of the other evaluation tools, faces many limitations. In the allocation of natural resources, it is especially difficult to determine the relevant externalities - some side effects are unknown -and to quantify or monetise these effects. Long term, cumulative impacts are also hard to identify. This may not be a problem because CBA, like science, may have the means to identify impacts in a specific situation. Problems also include an inability to identify who gains and loses in an alternative. The assessor needs to often use subjective judgement to evaluate the magnitude and frequency of effects and the nature of the relationship between cause and effects. Therefore the training, experience and personal views of the assessor become important (Rees 1985).

2.3.5 Planning balance sheet PBS is a variation of cost-benefit analysis, but relies less on quantification of costs and benefits and ignores the timing of benefits and costs (i.e., discounting). The main difference is that the community is involved by being split into groups of producers, operators and consumers. People may be in one or more groupings. For each alternative, the advantages and disadvantages for each group are listed and ranked. The rankings are then used to produce net totals for each sector and the whole community. While it is considered that PBS retains most of the advantages of CBA (Cowling and Steeley 1973) it also addresses some of the problems of CBA by incorporating analysis of the impacts on community groups. However, the method still emphasises efficiency and therefore prioritises any option which reduces costs and has well defined objectives and criteria for measuring achievement of those objectives. The benefits and the costs in a PBS can be aggregated but this requires a lot of subjectivity in determining impact weights and distributional weights (Alexander 1978). Future generations and species may also be disadvantaged in PBS evaluation as in the minimum requirements approach. PBS has been applied in assessing a coastal management plan in the UK (Penning-Rowsell 1989) but the plan referred to major works on land only.

2.3.6 Goals achievement matrix was developed by Hill (1968) to measure and compare the effectiveness of the most likely planning alternatives in satisfying objectives. Alternatives are given 'scores' by the planning team, measuring the degree to which it will achieve an objective. Scores are generally compared within a particular group of objectives, not between groupings. A variation on this enables policies to be ranked and then the composite score is achieved by summing scores to

produce an overall score. Public surveys may be used to gauge weighting of objectives or they may be derived within the planning team. If more than one planning agency is involved in the evaluation process, weighting may be different.

The formal methods (CBA, PBS, GAM) of evaluation are all products of the scientific approach to planning and are attempts to deal with choosing options 'rationally' (Nachmias 1979). However, it is questionable whether that is desirable, or even possible, in either the urban or natural environments (Hill 1985, Rees 1985). Barras and Broadbent (1982) criticise objectives as the main source of problems in the evaluation of plans and policies. Objectives are often too general, making the formulation of performance criteria difficult. Objectives once formulated may be ignored in the following plan-making framework. Objectives may be used in a mechanistic way, assuming that achievement may be measured quantitatively in all circumstances and objectives may not always be prioritised.

In the coastal environment, evaluation is made more difficult because of the significance and sensitivity of the natural resource base (see Part One of this report), the interdependence of coastal communities and coastal ecosystems (Lamson1986) and the importance of the coast for economic and non-economic reasons. Finally, the lack of knowledge about the effects of human activities on coastal environments makes analysis of cause and effect difficult to clarify in a formal evaluation.

2.4 Ex-post evaluation

Once a plan or policy has been implemented, the second round of evaluation is concerned with determining the degree to which the plan or policy has been effective in achieving its stated objectives. Questions raised at this point (Hill 1985) should include:

1. To what extent did the plan cause an observed effect?

2. To what extent is the plan responsible for -increased effective access, added protection for critical resources, enhanced coastal recreation, increased meaningful participation?

3. Is the policy/programme being implemented?
   -outputs or intervention in the system should comply with policy;
   -subsidiary plans should comply with plan guidelines.

4. What are the resource costs of implementing the plan?

5. Who is bearing the cost?

6. Does the distribution of costs accord with that specified in the plan?

7. Who are the main beneficiaries?
   -analyse the extent to which the plan contributes to the important goals of each interest group.

8. To what extent does the plan have political support?

9. What is the effect of changing economic, social and environmental conditions on the implementation of the plan?

The methodology adopted to carry out the evaluation at this point and the questions asked are very similar to the ones used within the planning process. In this paper we are not so much concerned with ex-post evaluation. However, it is desirable to state in the evaluation process which issues are to be dealt with in the ex-post evaluation of the NZCPS (as required under Section 28 of the Act), especially if the 'do nothing' option is selected as the appropriate means. For the coastal zone area, ex-post evaluative work done elsewhere (and before) may provide most of the necessary data required to do an ex-ante evaluation of policies here. For example, the US government (Lowry 1985) and Hawaii (Hawaii Office of State Planning 1991) have carried out such evaluation of parts of their coastal act and provisions. In all this, it is essential that the policies to be evaluated are well delineated and criteria to measure success are specified so that progress towards achievement of goals can be measured.

3. SECTION 32 REQUIREMENTS

The inclusion of Section 32 in the Act is part of an overall trend in government encouraging the use of alternatives to rules and regulations to improve accountability of decision-makers, and to devolve environmental management to the relevant level of government. It is argued that Section 32 will provide discipline because actions will be focused on achieving sustainable development rather than controlling activities for other purposes.

Section 32 provides a basic framework for evaluation of plans and policies at all levels. However, the choice of the evaluation method and criteria are the responsibility of the planning agency. Ministry for the Environment (1991b) emphasises that evaluation must be appropriate to the situation and may be in a narrative form, as opposed to a form of Cost Benefit Analysis. The problem facing the Minister of Conservation is the lack of precedence in deciding what an appropriate framework at a national level is. There are also problems in generating criteria which facilitate evaluation of the NZCPS, which is relevant to any discussion about coastal issues.

Section 32 of the Resource Management Act requires that policy statements and plans be evaluated BEFORE THEY ARE IMPLEMENTED to determine:

> *'(i) extent to which policy/statement is necessary to the purposes of the Act.*
>
> *(ii) other means in addition to or in place of such objective, policy, rule of other method which, under this Act or any other enactment, may be used in achieving the purpose of the Act, including the provision of information, services, or incentives, and the levying or charges (including rates).'*
>
> (Resource Management Act 1991, p.36.)

We understand this to say that before a policy, objective or rule is chosen, alternative ways of achieving the objective should be considered (or to determine if part of the objective is already achieved under another enactment). Also consideration should be given to the provision of information, services, or incentives, and the levying of charges. (We are not too clear about the latter bit.) This seems to be a mixture of implementation tools and basic information. Wheeler (1991) considers that there is a need to consider alternatives which depend on creating property rights of one type or other. There is also a requirement to examine the role of local authorities in achieving the purpose of the Act.

The explanation for why the New Zealand Coastal Policy Statement is needed was dealt with earlier in of this report and summarised above. The rest of this section concentrates on analyzing the different means available to achieve the purposes of the Act and carries out an evaluation of the chosen means and alternatives.

3.1 Means of implementing policy

There are various means that could be used to achieve the purpose of the Act in national planning for the coastal area. Some of the alternatives are:

1 Prescriptive planning and legislation (prescriptive law)
2 Provision of information
3 Provision of services
4 Incentives
5 Levelling of charges
6 Property rights

The choice of means will much depend on:

1. The certainty that needs to be achieved in knowing that the purpose of the policy will be achieved (for certain) in the time frame of the plan or through the accumulation of more information over time

2. The implementation costs of the different means, and

3. Other criteria (to be discussed below) which will consider aspects of efficacy, public participation, equity, etc.

Before we evaluate the policy statement in terms of means of implementation, it is necessary to discuss the alternative means in terms of their applicability to coastal planning at a national level. As will be obvious, most of the means mentioned will play a role. It is seldom the case that one means will be the sole way to resolve a problem or conflict, as demonstrated in Figure **3.** For example, incentives for appropriate development may be supported by charges against inappropriate activities. In recent years much thought has been given to the possibility of relying solely on property rights as a means to achieve the purposes of managing public goods but property rights without information or a legislative and regulatory framework will fail. In most situations, therefore, all the means will be required to play a role. The question will be how much each should or could contribute, and in what combinations, in coastal policies at a national level. In each combination the implications will vary.

Means of implementing policy / Policy groupings	Property rights (transferable)	Levelling of charges -impact fees	-resource rental	Incentives	Provision of Services	Provision of Information	Reactive Planning	Prescriptive Law/ Planning
Needs of future generations	●							●
Safeguarding life supporting capacity								●
Avoiding adverse effects	●	●					●	●
Remedying/mitigating adverse effects	●	●					●	●
Treaty of Waitangi	●					●		●
Preservation of natural character	●	●	●		●	●	●	●
Protection of natural features	●				●	●	●	●
Protection of significant/indigenous flora/fauna	●				●	●		●
Maintenance of public access			●		●	●	●	●
Relationship of Maori to coast								●
Kaitiakitanga	●	●	●	●	●	●	●	●
Efficient use/ development of natural/physical resources	●	●	●	●	●	●	●	●
Maintain/enhance amenity values	●	●	●	●	●	●	●	●
Intrinsic values of ecosystems					●	●	●	●
Recognise/protect heritage values	●				●	●		●
Maintain/enhance quality of the environment					●	●		●
Finite characteristics	●	●	●	●	●	●	●	●
Crown interests protected	●	●	●	●	●	●	●	●
Protection of trout and salmon habitat	●	●	●		●	●		●
International obligations	●				●	●	●	●
Procedures to monitor policies/review					●	●	●	●
Integrated management	●	●	●	●	●	●	●	●

Note: ● denotes the most appropriate means- some of which are used in other countries

Figure 3 Analysis of suitability of different means for implementing various types of policy at a national level.

3.2 Legislation or prescriptive law

This is generally perceived to be important to ensure that the national authority can deal with interjurisdictional problems on the coast (Hildebrand 1989). Since the Resource Management Act preempts the roles of national, regional and local coastal plans and provides the framework considered necessary for a permit system (OECD remains for the NZCPS to provide guidelines about the formulation of subordinate plans and criteria for assessing applications for permits. Legislation is the principle means by which the government protects the public good but that needs to be qualified.

Legislation or prescriptive law is generally perceived to be important to ensure that the national authority can deal with interjurisdictional problems Hildebrand 1989). The process of 'Prescriptive planning' requires the planner to gather as much information about the future, as possible, with the aim of reducing uncertainties and emphasising the avoidance rather than the amelioration of effects. Researchers (IUCN 1980, IUCN 1991, Kozlowski *et al.* 1986) generally agree that if societies are serious about implementing the concept of sustainable development, some effort has to be made to anticipate future effects.

Prescriptive planning also requires that plans supported by regulation should be put in place **before** development proceeds. In recent times, though, it is accepted that reactive measures such as using various types of impact assessment for individual project proposals are also necessary. The policies and regulations derived in planning prescriptively should be anticipatory (Simonis 1984, Scimeni 1987), again aimed at preventing environmental damage.

The implications of relying on a prescriptive approach are that the future possible environmental problems need to be defined (even just estimated) along with the implications of gathering functional information on an on-going basis. It is also possible to define strategies or means for dealing with potential problems and to prioritise the short term strategies for action plans and/or corporate plans at a regional and local level of planning in New Zealand.

There are difficulties in opting for prescriptive policies, mainly because of the problem of gathering information about problems characterised by their complexity, uncertainties and the time pressure associated with the compilation of a plan or set of policies. Governments also have problems in that they generally have not yet adopted the management styles appropriate to focusing on long term issues and problems associated with economic development. Where standards are required to be set regarding quality of water, air or soil, it may be difficult to anticipate future effects of human activities and the technological capability of society to ameliorate adverse effects.

Opponents (usually in development sectors) criticise prescriptive planning, referring to the problems of gathering information about the effects of potential types of development which may not even eventuate. It is assumed that information gathered before development occurs may in fact be wasted -thus an unnecessary cost for the

community. Therefore, it is also necessary to have in place reactive measures to deal with effects where compromises are made to accommodate development.

3.3 Reactive planning

Reactive policies usually take the form of an adaptive management approach in which guidelines for Environmental Impact Assessments, Economic and Social Impact Assessments and emission standards, are formulated (e.g., Carpenter and Maragos 1989). Cost-Benefit Analysis may also be used at this stage to assess the economic implications of each development project. The support for these measures arises out of the fact that they are cost-effective and do not need to be activated until the demand for development occurs. However there are problems in such approaches. There is a lot of duplication in the information-gathering and analysis phases of EIA's because each project uses different baseline data in the analysis of developmental effects. Furthermore, there are difficulties in identifying the range of impact variations which could be considered normal as opposed to change as a significant departure from a normal range of anticipated change. This is associated with the problem of consistently projecting baseline conditions for each project into the same future time frame as impact predictions (Everitt 1983).

In the plan-generating phases of prescriptive coastal planning, information should be gathered and structured to facilitate its use in reactive planning approaches, as a basis for EIA and monitoring in individual projects. The advantage of integrating prescriptive and reactive approaches is that there is a reduced emphasis on developing standards and concentrated effort on preserving ambient environmental quality. Regulations should be used to protect the absolute limits of what is to be preserved, conserved or protected and EIA's should only be used to evaluate effects within those limits. Information development itself then becomes an important 'end product' in all levels of planning in Ecologically Sensitive Areas such as the coast (Eagles 1984, Rosier 1991).

3.4 Provision of information

Provision of information at a national level of coastal planning varies. The most important function is to provide inter-jurisdictional information about coastal ecosystems. Information needs to be functional (describing a cause-and-effect relationship) rather than descriptive (such as resource inventories). Technical assistance is also important especially in small countries where the pool of expertise is small. It must also be accepted that even with development of information bases, there will be uncertainties about the consequences of management actions (Lowry 1985, Hildebrand 1989). Uncertainties arise out of lack of knowledge about possible future technologies, the complexity of coastal ecosystems and the resultant possibilities for cumulative effects of human activities to remain unnoticed for many years.

The provision of **information** at a national level of government regarding the possible uses and their possible impacts on the New Zealand coastal environment will not be sufficient to achieve some of the objectives of the Act because most decisions about the characteristics of development are made at lower levels of government (there is plenty of overseas evidence to demonstrate this) (Matuszeski

1985, Lowry 1985, Hildebrand 1989, IUCN 1991). However, information does provide an essential basis on which other means rely. It creates awareness of coastal issues in the community, and elicits community support for planning.

3.5 Provision of services

Services offered by the national agency will include the provision of information. For example the national level may commission research of use in subjects, such as coastal processes, waste treatment technology and climate change, in so far as they affect the preparation of coastal plans. Other types of services offered include the funding and provision of technical assistance, the training of local planning officers, assistance to local government to coordinate plans covering areas of more than one jurisdiction and the provision of funding to community groups and non-government organisations to improve public awareness (Lowry 1985, Australian House of Representatives 1991). In some countries the overseeing of regional- or state- level plans is also seen as a service (Burgess 1989, Sorenson and McCreary 1989). In Hawaii, the Hawaii Ocean Resources Management Plan (1991) offers guidance to other departments and agencies, at the same level of government, about actions they should carry out to implement the plan. For example, implementing actions for policies about fisheries management are suggested for the Hawaii State Department for Land and Natural Resources (fisheries) and the US National Marine Fisheries Service, about evaluation of fisheries, fishery rights and long range fishery plans. This sort of service would only be acceptable in New Zealand if the other government departments accept the coordinating role of DOC in regard to the coast.

Any programme to increase public awareness of coastal problems must achieve a number of objectives. It must aim to foster a new 'attitude' (away from the emphasis on private property rights) about the coast and the protection of the resource for the reasonable needs of future generations. This entails the publication of books, pamphlets and material for schools and the organising of hui, seminars and workshops for groups in the community.

Should DOC provide this information at the national level or is it to be disseminated by Regional and District Councils? There is an important cost factor involved here and clearly there are economies of scale in the national generation of information. Also, regional collection may lead to duplication of data. An alternative would be for to set up the wider framework for data gathering in which Regional and District Councils can enter their specific information needs.

3.6 Incentives

Incentives could be used to focus on the need to encourage regional plans to be consistent with national policy and plans of adjoining regions. Incentives may take the form of grants (Walsh, 1982) to ameliorate environmental losses, to facilitate the development of public facilities (e.g., improved public access) or to enable the construction of particular projects of national importance. Incentives could also be used to encourage appropriate behaviour in the coastal zone (e.g., incentives not to

drain wetlands -the major means to achieve the objectives of the Act would then be to create an incentive structure which would achieve the preservation of wetlands). Setting the incentive and knowing beforehand how people will act on the incentive is something that is uncertain and that may not be acceptable.

Incentives may not necessarily be financial. For example, a developer may be permitted to develop a wetland if a comparable wetland is restored or another is created. People may assist in patrolling coastal areas without financial reward if they feel there are other advantages. Incentives are usually applicable at the level at which plans are implemented and are generally associated with a system of charges.

3.7 Levelling of charges

Charges are another means of changing behaviour and achieving stated goals. They also can be used to obtain a rental for resources used in the coastal area. Often, charges on their own may be enough to achieve the purpose of individual policies but this would need to be carefully evaluated because it infers that effects would be permitted in the coastal area. The main advantages accrue to industry in the form of management flexibility and positive economic returns.

The 'polluter pays' principle is a common approach to effluent discharge problems. Here the costs and penalties are paid in the form of levies, emission charges or fees by polluters to balance against the detrimental effects of pollution until the means are available to do a clean-up. A variant of this concept is the 'water bubble' in which several discharges contribute to one zone with overall absolute limits (Carter 1988). Polluters may compete to use part of the limit. The problems in New Zealand are that there are very few places with a concentration of polluters and there are cultural concerns about the discharge of any effluent into coastal waters.

Another example of a charging system would be the 'Impact Fee System' operated in US States and Counties. The aim of the system is to produce revenue for capital improvements by financing essential and optional public services and facilities, such as sewerage, police and libraries. The system usually operates within the framework provided by a prescriptive plan (Auerhahn 1988, Leitner and Strauss 1988). The kinds of coastal projects which could benefit from revenue include reclamation projects, the construction of public access and facilities and the construction of land-based sewerage treatment plants to replace ocean outfalls.

However, such charging should probably be considered at regional and district levels of coastal planning in New Zealand rather than at the national level. One of the main disadvantages of the approach, which usually operates within the consent system, is that new development, or development which requires regular renewal of consent, is penalised.

3.8 Property rights

Property rights refer to a method of clearly assigning rights to resources in the coastal area and then leaving its allocation and use to the market. (Take, for example, the open-access fishery resource which was privatised in terms of individual transferable quotas). By clearly defining the rights associated with the private property right, and by specifying the wider environment (and constraints) within which these rights operate, it is hoped (believed?) that the market will allocate resources **efficiently** while still achieving the wider objectives of utilising those resources.

For example, preserving rural land in the USA is a major issue. To deal with this issue, land in the peri-urban area could simply have been zoned for agriculture and that would have stopped any further urban development on that land. Using a prescriptive planning tool brings with it inefficiencies, questions of equity and bureaucracy. An alternative way proposed (and implemented in some States) was the Transferable Development Right (Daniels 1991). Land was still not allowed to be converted to urban development uses but the owners of the land were given a development right which they could sell in the market (to someone who needed such a right) and in this way received compensation. (This is identical to the transferable development rights on historical buildings in New Zealand.)

Could such an approach be used in the coastal zone region as well as to preserve wetland, indigenous forests or other natural assets that society would like to preserve? Of course it is not necessary to go all the way to defining transferable rights. Society could also adjust the rights contained in the bundle of property rights associated with resources in the coastal zone. For the concept to be successful there has to be acceptance of the concept, demand for the resource (e.g., wetland for conversion to 'usable' land), suitable alternative sites made available for the creation of wetlands of a similar nature and the expertise to ensure ecological objectives are achieved. Such a 'means' would probably be more useful at a regional level of planning in New Zealand.

It is our opinion that combinations of these measures and others will be required to achieve the policies embodies in the NZCPS. Any means chosen are also affected by the type of planning context provided by a particular set of policies and the priorities set by Sections 5, 6 and 7 of the Resource Management Act.

4. EVALUATION CRITERIA

Within the evaluation framework, policies and/or means of achieving policies are also measured against criteria which are traditionally considered to represent desirable attributes of policies protecting public goods. Common criteria include economic efficiency, equity and fairness, administrative efficacy, systems approach, prevention of pollution at source and avoiding irreversible impacts. In New Zealand there is additional concern about honouring the Treaty of Waitangi.

Lowry, Jr (1980) discusses the setting of criteria and the level at which they are used. He gives the following example:

> "One of the policies in Hawaii's coastal zone program is to minimize destruction or degradation of coastal water ecosystems by effective regulation of stream diversion, channelization, and similar water uses, recognizing competing water needs.
>
> "Program logic criteria might involve 1) the determination of whether agencies charged with 'effective regulation' have regulations governing 'stream diversions, channelization, and similar land and water uses…"; and 2) the adequacy of those regulations in terms of assuring that disruption or degradation of coastal ecosystems is minimized. Compliance criteria would involve a determination of how consistent agency decisions involving stream diversions are with their own guidelines and with the Coastal Zone Management Policy. Process criteria would emphasize the type of information that is required in making such decisions, the degree to which technical analysis is incorporated in the review process and similar considerations. Goal achievement criteria would be related to the number of coastal ecosystems that are degraded or depleted subsequent to program implementation. Impact criteria might involve, among other considerations, the effects of this policy on community water supply, the population of valued shellfish which live in coastal water ecosystems, or any other of a number of potential direct or indirect impacts.
>
> "An evaluative criterion, in short, represents a policy value which may be affected positively or negatively by the program or some element of the program."
>
> (Lowry, Jr 1980, p.240)

The quote shows what a variety of criteria one can have in evaluating policies at various level of implementation. In what follows below we have written down some of the criteria we think are essential in the evaluation process.

4.1 Economic efficiency

Attainment of objectives with least cost would require the comparison of marginal costs and benefits of proposed actions. For example, the setting of water quality standards implies both costs and benefits to society. Economic efficiency implies that the marginal benefits should be greater than the marginal cost to society's welfare, because of the policy. Similarly, the policies regarding the provision of public access, the restriction of building activity, or the prohibition of land conversion all impose benefits and costs. The criterion of economic efficiency requires that the marginal benefits exceed marginal costs.

In many situations the need is to evaluate various means to achieve a particular objective (e.g., particular end or benefit). In such situations the benefits are fixed and the aim will be (in light of the economic efficiency criterion) to find the least expensive means to achieve the objectives or ends. This can be achieved by using cost effectiveness analysis.

Cost effectiveness analysis implies simply that the benefits are greater than the costs (e.g., desirable end). Therefore, if the law does not specifically state that this end is to be achieved, a CBA should be carried out to ascertain that the policy will actually yield benefits that outweigh the costs. This can be demonstrated by the following example:

Goal: To protect the level of the groundwater table and the quality of the water.

Means: To protect the **level** of water, it would be possible to regulate use by means of water permits, meters, transferable development rights, etc. (regulatory policies or mixtures of regulation and economic instruments). Different policies will have different cost implications (as well as equity and efficacy ones which are dealt with separately). Economic efficiency requires that planners pick the least expensive option.

To protect the **quality** of water alternative means would include: regulation of use and effluent disposal, enforcement of treatment provisions, use of assimilative capacity of wetlands and restriction of activities near the aquifer, if quality is to be maintained or improved, with the least cost.

However, to determine a desirable standard of quality requires analysis of the benefits to society of achieving this objective and the costs of doing so. The history of environmental management is rife with examples where the analysis of cost effectiveness which, in this instance should be the first step was not carried out and expensive policies were enacted with serious consequences for economic activities.

There will be situations where irreversible consequences to natural systems will require policies that regulate activities, for which benefits and costs have not been (and cannot be) evaluated. Here, other over-riding criteria related to sustainability and generational equity will determine the policy, not the benefits and costs. In those situations, the purposes of the Act clearly provide the justification for action. Cost-effectiveness evaluation is required to find the least cost policy.

Not all decisions in the coastal zone involve irreversible change. Sometimes trade-offs may be possible, without endangering the environment or contradicting the purposes of the Act. In such situations, it is still important to evaluate the benefits.

Generally the analysis of the present and future situation uses current zoning as a baseline. The net economic benefits of managing economic growth in the coastal zone (e.g., allowing changes to the existing situation) are then calculated. This does not necessarily result in decisions which ensure sustainable development. Least cost

solutions and net economic benefit solutions do not promise to be sustainable solutions. It is therefore important to restate that this criterion of efficiency only gives one bit of information with regard to the means to be implemented. They only help to determine the most efficient one. That leaves questions of sustainability and equity to be resolved using other criteria.

Coastal erosion and subsequent human activities to protect coasts can be analysed in this way. Relevant questions include:

1. Who obtains protection benefits?
2. What additional access cost is necessary to use the benefits of the added protection?
3. What access may be lost because of the added protection?
4. What payment in kind or an alternative can be made for those paying for the protection or losing access?
5. What degree of uncertainty exists for the above?

It is these kinds of questions that lead into the second criterion.

4.2 Equity/Fairness

Equity/fairness both actual and perceived is also important. Here answers depend on whether analysis is normative (analysis depends on prescribing what should be done on ethical principles of fairness and rights, we should acquire more beaches) or positive (analysis depends on defining facts, demand for more beaches and the effect on opportunity costs of increasing public access is analysed). Calculating human demand has difficulties and it may ignore long term secular changes from innovations in technology (e.g., windsurfers). The analyst needs up-to-date data. The question of who pays becomes important (e.g., tax on small craft pays for funding of small craft marine charts). 'Onus of proof' and responsibility for funding research should be on the polluter.

Equity/fairness also raises the need for analyzing the benefits and costs of species survival and the need to respect the geomorphological processes of the coast. Questions include:

1. Do we safeguard species for our own survival or theirs?
2. Do we protect species for our own enjoyment or for that of our descendants or because they have a right to exist?
3. What about national guarantees for habitats of international significance?

Therefore, we need to monitor species losses, habitat destruction and appraise key sites to stabilise species diversity and survival (this may need international agreements).

The well-being of different income groups/interests alive, the well-being of non-human environmental phenomena alive/existing, and the well-being of future generations/ phenomena become important issues because meeting the interests of one group current generations) may preclude the interests of another (e.g., future generations or species).

4.3 Administrative efficacy

Administrative efficacy, feasibility of enforcement and reasonableness of administrative costs are important calculations. Evaluation criteria include:

1. Attribution of effect: Did the coastal management plan cause an observed effect?
2. To what extent is it (The Plan) responsible?

Two kinds of outcome may be expected:

1. Substantive change (increased access, added protection for critical coastal resources, enhanced coastal recreation, improved port facilities)
2. Institutional change (legislative and policy improvements, budgetary commitments of resources for coastal management, recreation, and improved port facilities.

4.4 Systems approach

Plans and policies must acknowledge the need for a systems view of the interdependence of environmental elements and related monitoring and enforcement of standards. Short-term engineering improvements interfere with long term dynamic equilibrium situations and usually require further human tampering to ameliorate 'knock-on' effects. The best system appears to be the integration of land and water management at a regional water catchment level within a national framework.

One of the key requirements here is to identify and reduce gaps in the knowledge base. Such problems include:

1. Inter-agency rivalry
2. Some spatial areas neglected in collection of information
3. Problems in generating knowledge fall between research funding agencies.

Planners need to remember that parts of the coastal system are not connected in a uniform way, that some ecological components are more important than others and that coastal ecological ecosystems often change abruptly and unexpectedly. Systems may have more than one equilibrium region and therefore there are a range of possible responses to human interruptions (Lamson 1986). Planners need to ensure that analysis is carried out to determine the system's resilience to respond to change and the subsequent effects on human communities dependent on the coastal system having the capacity to respond to environmental change.

4.5 Prevention of pollution at source

Prevention of pollution at source is a major objective. This is controversial because most of our efforts in the past and the recommended technologies have been end-of-the-pipe treatment technologies.
Most policy makers are now trying to move from measures like emission standards to measures of ambient environmental quality. This requires a shift from trying to understand 'causes' as the basis for setting policy to understanding point-source

regulation controls combined with ambient quality objectives. Use Best Possible Environmental Option (BPEO) to specify:

1. Spatial and appropriate medium for emission of waste discharge,
2. Duty to lower emissions over time… need decision rules for correct quantity, and character of waste and how and where it will be discharged.

Resources should be developed less extensively where there is downward irreversibility, (e.g., wilderness areas once developed cannot be restored to their original state). Greater emphasis should be placed on investments which result in environmental quality being enhanced, especially in places where 'not investing' has irreversible consequences for ecologically significant environments (Ledec and Goodland 1988).

4.6 Treaty of Waitangi

This report is not the appropriate place to discuss the means by which regard may be given to the Treaty in coastal planning as this requires complex, expert advice and negotiation with Iwi involved. However, there are considerations which are important in guiding the formulation of coastal plans at all levels. Confidentiality is important when negotiating how to make provisions for some Maori values in the NZCPS. There is an overriding understanding that the Crown needs to consult with tangata whenua to determine needs and the means for protecting places of significance to Maori for various reasons (Ministry for the Environment 1991a).

5. CHOICE OF EVALUATION TECHNIQUES

This part of the report concerns suggestions for a detailed evaluation of the NZCPS and two sections taking into consideration possible evaluation techniques and criteria and the means of achieving policies.

Generally, at this level of planning, given the nature of the NZCPS, **topic evaluation** is the only viable technique. The policy statement is too general to facilitate the identification of the exact effects of policy on different sectors of the community and the comparison of costs of implementation against the benefits to Maori (in having the Treaty honoured), to future generations and to species.

The application of other evaluation techniques would require more detailed evaluation of specific objectives of the affected groups and some degree of certainty about the actual costs of the effects to various community groups, resulting specifically from the policy statement alone. There would also need to be evidence that the effects are real, not hypothetical (e.g., developer has an idea being implemented/land purchased and normal expectation of success under the current planning regime) to claim that the effects of the policy are detrimental.

At this stage it is not even practicable to carry out a CBA evaluation on the requirements of DOC in regard to specific issues, such as applications for restricted activities or marine farming projects. Firstly, the real costs (including ongoing

research, development of policy and communicating with other such agencies) of dealing with applications are not recouped by DOC from the developer. Secondly, a lot of information required to be generated in an application to DOC would also be needed in the regional consent procedure for activities with potentially serious effects (Resource Management Act 1991, Section 92).

The NZCPS meets the requirements of the IUCN (1991) and provides a framework for plans at the regional and territorial levels of planning for the coast. It is general enough to permit flexibility at those levels of planning. However, the degree to which costs associated with national policies are imposed on communities and individuals will depend on the detail of prescribed provisions and the physical and institutional peculiarities of the region. The majority of costs imposed on planning at lower levels are associated with the definitions of what constitutes a restricted activity, the designation of ecologically significant (nationally) areas and other requirements for applications to the Minister for Conservation. The degree of detail in information needed and therefore the emphasis on specific issues and effects will vary across regions. Therefore, costs would vary depending on the degree to which regions are experiencing demand for potentially unsustainable development.

There will also be situations where policies are only included in the NZCPS to achieve the purposes of the Act, for example, to maintain public access. The Act may also specify certain issues to be included in the NZCPS. The aim then becomes to achieve policies in a manner which is socially, economically and ecologically effective. It would probably be more appropriate to evaluate costs in an Ex-Post evaluation of the NZCPS, a requirement specified in Sections 28(d) and 58(g) of the Act. At a later date, the activities affected and their characteristics are more likely to be known.

The other problem in evaluating the NZCPS is that the main purpose of the Act is to achieve environmental objectives. It is not a vehicle to achieve social objectives unless they are associated with the use of natural and physical resources but it is obvious that all policies will have social, cultural and economic implications as well as environmental effect. The IUCN (1991) emphasises that equity issues are to be dealt with as an integral part of environmental planning.

6. EXAMPLES OF EVALUATION OF POLICY GROUPINGS

The evaluation of examples of the possible policy types will be carried out in terms of the means of achieving the policies' intentions and the criteria discussed in detail earlier, e.g., equity. Although they are not the final policies, the evaluation provides a guide to the possible style of discussion which could arise about issues in relation to policies.

EXAMPLE 1
Section. Maintenance and enhancement of the quality of the environment

This section requires that decision makers recognise the need to maintain and enhance the quality of the environment. Therefore consumptive uses need to be

regulated and emphasis should be given to non-consumptive uses and protecting existence values. Regional Councils should be encouraged to adopt a stewardship role for the coast in their management plans and to prevent or mitigate against externalities which are irreversible.

Means: Firstly, there needs to be an evaluation of the 'state of the environment' to determine the extent to which coastal systems are degraded (Kirk 1986, Australian House of Representatives 1991). This will vary between regions, but there have been attempts in other countries to assess the coastal environment (Australian House of Representatives 1991). The New Zealand Coastal Resource Inventory should be assessed to determine the degree to which it is providing 'functional' information, facilitating the analysis of effects of human activities on the coast. Details of DOC's publications about the coast, coastal material sent to schools/educational institutions and the programmes of seminars and workshops should be re-evaluated to determine the degree to which they could achieve the various purposes of the Act.

The means adopted in the policy for regulating use of the coast should acknowledge that human and ecological systems are interdependent (Lamson 1986) and plans must acknowledge the need for a systems view of the interdependence of environmental elements and related monitoring and enforcement of standards.

Short term engineering improvements interfere in long term dynamic equilibrium situations and usually require further human tampering for 'knock-on' effects, e.g., the best system appears to be integration of the management of land and water at a regional water catchment level.

One of the key needs here is to identify and reduce gaps in knowledge base. Development of baseline data and databases include the following problems:

1. Inter agency rivalry
2. Some areas neglected re information
3. Some problems of generating knowledge fall between research funding agencies.

Planners need to remember that parts of the coastal ecological system are not connected in a uniform way, that some ecological components are more important than others and that ecological systems often change abruptly and unexpectedly.

Coastal systems may also have more than one equilibrium region. Therefore, there may be a variety of responses to natural and human interruptions. Unexpected responses can cause economic collapse if predictions are excessively wrong.

It is necessary to ensure that analysis is carried out to determine the system's resilience to impact or capacity to respond to change and the subsequent effects on human communities dependent on the capacity of the ecological system to respond to change. Since maintenance of the natural environment is a principle purpose of

the Act, DOC should state what the national responsibilities are for gathering the right type of information about potential impacts of human use (IUCN 1990, Hildebrand 1989) in the coastal zone. Regional Plans should also be required to develop 'rules' of use for the open access resource (Randall 1987). Such rules may preclude the emission of noxious materials into the air, soil or water. The responsibility of the NZCPS is to outline national obligations and matters of importance in terms of international agreements about the protection of species (IUCN 1991).

EXAMPLE 2
Section. Maintenance and enhancement of public access

Reading through the draft section, this implies that we need to:

1. Provide for the maintenance and enhancement of public access. This requires:
   -the prevention of alienation of foreshore, seabed, and public land (immediately adjacent to the foreshore)
   -avoidance of long term leases and licences, or other property rights, etc.

2. Provide opportunities for recreation which do not affect:
   -the environment
   -Maori or cultural values
   -the enjoyment of other users.

3. Seek to minimise the adverse effect of access restriction.

4. Take account of the Treaty of Waitangi and Maori customary rights.

5. Carefully consider waivers for esplanade requirements.

6. Have policies of future recreation and appropriate ownership and land use especially where there is erosion.

In what follows below, we have tried to spell out some of the matters stated in the Act. The justification for all of them is therefore in the Act. The question then is how can we achieve some of those policies as expressed in the draft statement? Or, what are the means and how do we evaluate them?

Means: Looking at 1-5 above.

1. To maintain access, and control alienation of land.
   This could be controlled (as has been done overseas) by the use of a percentage ratio, i.e., what percentage is fair alienation? This, however, is rather simplistic and raises all types of questions regarding the type (character) of land that not be allowed to be alienated, or with regard to the fact whether this ratio should be the same for all regions.

   On the one hand we have a simple (but perhaps simplistic) tool to administer. On the other hand we have the much more complicated question of how alienation relates to public access and how this in turn varies from region to region.

2. Public access.
   How is public access maintained? What is the demand for public access, and how much of it is currently available (regional and national)? What we need is information on the base line situation, and possible deterioration. To enhance access is different, however. Here we need to look at improving access and this may involve costs. How much more access is desired and at what cost? (A similar question needs to be asked in the enhancement and maintenance of environmental quality in the coastal zone area). A very difficult question from the national level which is much more feasible from the regional level.

3. Maintain the conservation and other values.
   This could be achieved through direct control. However, this would require information on carrying capacity, and the interrelationship between use and adverse impacts. Already, some protected species and habitats are already protected under the protected species programme. Further control could be achieved by limiting use (access?) through parking limits in the coastal area, construction control and other capacity regulations. At the same time use conflicts need to be managed.

4. Treaty of Waitangi, Maori customary rights.
   This would require close consultation with the tangata whenua (iwi authorities), to define Maori values, and to determine the kind of usage which that infers.

5. Esplanades.
   When is a waiver reasonable, acceptable? Sometimes esplanade reserves do not provide public access at all, and the requirement may be unnecessary. However, this will vary from area to area. What areas should not be alienated (characteristics)?

To achieve the above, the implementation tools discussed earlier (Section 3) can all be used. The approaches will vary from prescriptive to responsive ones. The choice will much depend on the data available and the certainty needed in terms of achieving the objectives.

Having chosen, therefore, some sets of implementation approaches, the Act then requires an evaluation:

> *"(b) carry out an evaluation, which that person is satisfied is appropriate to the circumstances, of the likely benefits and costs of the principal alternative including, in the case of any rule or other method, the extent to which it is likely to be effective in achieving the objective or policy and the likely implementation and compliance costs…*

This section says that the means to achieve the policies need to be evaluated in terms of benefits and costs and in terms of effectiveness. This is not very straight forward at all. In some cases the benefits are the ones specified by the Act (public access) and therefore the means can only be compared in terms of cost efficiency and effectiveness. Effectiveness can be defined in terms of administrative effectiveness and ecological effectiveness.

Going back to our earlier example of public access, to answer some of the questions posed, research needs to be done.

1. **Alienation and access**

With regard to these issues, local and regional surveys need to be done on current public land holding and access. The question needs to be raised as to how costly this will be and what the value of this information is going to be. Would a simpler approach (a simple percentage for alienation) suffice in some regions? But at the same time information needs to be gathered on the demand for public access, where it will be demanded and where it is possible. We need information on demographic changes and changes in tastes and preferences. Information on attitudes is also necessary. All this would be much better done from the national level (rather than regional). This national data will to some extent be generic and useful to the regions. DOC should take the lead in gathering this information, as there are clearly economies in scale to be gained from avoiding duplication and doing a consistent analysis for New Zealand. If DOC could set the wider framework of basic data, Regional Councils could build on this and add locally specific data to it.

Again we are talking here basically about cost-effective ways of doing this.

2. **Control on recreational activities**

This may imply constraints on building, parking, access, etc. Trade-offs will be required as to who will be allowed and who will not. Costs will be involved. There will be secondary effects associated with this. They need to be looked at, if only because of equity considerations. The overall purpose here is to maximise the recreational experience by minimising the conflict between environment and recreational enjoyment.

7. CONCLUSIONS

Overall, it is hard to see how particular policies can be evaluated in terms of cost and benefits. We are really discussing implications when choices can be made by a lower level of planning. Is DOC to specify what should be done when regional and local policies are written? How are national concerns coordinated? Can each region and district independently decide on which wetlands to drain, which esplanade requirements to waive, etc.?

In all this there is little scope for economic criteria such as, economic efficiency, equity and fairness, efficacy, systems approach, prevention of pollution at source and the Treaty as discussed earlier. There is also little scope for Cost-Benefit analysis. The benefits are already defined by the Act -we can only consider the costs. There may be scope for the use of some economic instruments such as charges, and tradable rights but then only within a wider decision making framework that takes into account considerations other than economic values and considerations.

Ultimately, the Act has done the balancing of benefits and costs by stating that sustainability and maintaining and avoidance is to be achieved. We can only worry about how much it is going to cost us and if we can discover the most effective and

efficient ways to implement those requirements. And this can only be done by analyzing very specific policies and implementation strategies.

What should be considered is the criterion of farness/equity. On the one hand, we have inter-generational equity, while on the other we have temporal equity. The Act to some extent answers some for the inter-generational questions, e.g., should we provide for future generations. Temporal equity raises questions about who pays and who receives benefits. All policies have equity consequences and they should be clearly identified (and measured where possible).

Administrative efficacy lies in terms of enforcement and monitoring and the reasonable cost of doing so. We need criteria for monitoring and enforcement. The questions again is 'Who should put those into place, and what will it cost?' Does DOC give guidance here?

Therefore, because the evaluation is being carried out in the absence of data about many issues, it is difficult to even recommend a structure for the document although it is clear that some reference will have to be made to the following points:

5 Support for the structure of the evaluation
6. Reasons for the choice of criteria to evaluate policies
7. Evidence of the effects attributed to policies
8. Criteria to monitor whether effects were accurately attributed
9. The attitudes of individuals and groups consulted by DOC during the preparation of this, the first NZCPS.

It is hoped that this report assists in that process by suggesting criteria and examples of questions that should be asked in the evaluation.

8. REFERENCES

Alexander, I. 1978. The Planning Balance Sheet: An Appraisal. *In* A.J.C. McMaster and G.R. Webb (Eds.) Australian Project Evaluation. ANZ Book Company, Sydney.

Anon. 1990. Ecologically Sustainable Development. A Commonwealth Discussion Paper, Australian Government Publishing Service, Canberra.

Auerhahn, E. 1988. Implementing an Impact Fee System: Ten years of experience in Broword County, Florida. *of American Planning Association* 54: 57-70.

Australian House of Representatives 1991. The Injured Coastline: Protection of the Coastal Environment. Australian Government Publishing Service, Canberra.

Australian Water Resources Council 1988. Workshop on Integrated Catchment Management: Proceedings. Melbourne, Victoria.

Bacon, P.R., Deane, C.A., and Putney, A.D. 1989. A Workbook of Practical Exercises in Coastal Zone Management for Tropical Islands. Commonwealth Science Council, London.

Breheny, M. and Hooper, A. (Eds) 1985 Rationality in Planning. Pion Limited, London.

Burgess, J.P. 1989. Status of the Coastal Program -A Federal Perspective. Paper presented to *Coastal Zone '89 Conference, Charleston, U.S.A.* 7 p.

Camhis, M. and Coccossis, H. 1982. The national coastal management program of Greece. *Ekiotics* 293: 131-137

Carpenter, R.A. and Maragos, J.E. (Eds) 1989. How to Assess Environmental Impacts on Tropical Islands and Coastal Areas. South Pacific Regional Environmental Programme (SPREP). 345 p.

Carter, R.W.G. 1988. Coastal Environments. Academic Press, London.

Cowling, T.M. and Steeley, G.C. 1973. Sub-regional Planning Studies: An Evaluation. Pergamon Press, Oxford. 202p.

Cullen, P. 1987. Coastal Resource Management and Planning. *Australian Planner* 25:10-12.

Daniels, T.L. 1991. The Purchase of Development Rights. *Journal of the American Planning Association* 57: 421-431

Department of Lands and Survey 1984. Proceedings. *Coastal Zone Management Seminar, Wellington,* New Zealand, 1984

Eagles, P.F. 1984. The Planning and Management of Environmentally Sensitive Areas. Longman New York.

Edwards, S.F. 1987. An Introduction to Coastal Zone Economics. Taylor and Francis, New York.

Everitt, R.R. 1983. The Relationship Between the Environmental Scientist and the Decision-Maker: A Canadian Perspective. Pp. 105-127 *in* PADC (University of Aberdeen) (eds.): Environmental Impact Assessment. Martin Nijhoff Publishers, The Hague.

Fischer, D.W. 1990. Governing the U.S. Coastal Zone: An Unresolved issue. *Ocean and Shoreline Management* 13: 21-34.

Government of Victoria 1989. Submission to the Federal Parliamentary Inquiry to review the Protection of the Australian Coastal Environment. 17 p.

Hawaii Ocean and Marine Resources Council 1991. *Hawaii Ocean Resources Management Plan.* State of Hawaii Department of Business, Development and Tourism, Honolulu.

Hawaii, Office of State Planning 1991. *Hawaii Coastal Zone Management: An Evaluation.* Hawaii Office of State Planning, Honolulu, HA, U.S.A.

Hildebrand, L.P. 1989. Canada's Experience with Coastal Zone Management. The Oceanic Institute of Canada, Halifax, Nova Scotia.

Hill, M. 1968. A Goals-achievement Matrix for the Evaluation of Alternative Plans. *Journal of the American Institute of Planners* 34: 19-28.

Hill, M. 1985. Can Multi-objective Evaluation Methods enhance rationality in planning. Pp.166-182 *in* Breheny, M and Hooper, A. (Eds): Rationality in Planning. Pion Limited, London.

M.M., James, D.E., Meister, A.D., Bower, B.T. and Dixon, J. 1983. Environmental Natural Systems and Development. The Johns Hopkins University Press, Baltimore.

IUCN 1980. World Conservation Strategy. International Union for Conservation of Nature and Nature Reserves, Switzerland.

IUCN 1991. Caring for the World: A Strategy for Sustainable Living. IUCN/UNEP/WWF Switzerland.

Jollife, I.P. and Patman C.R. 1985. The Coastal Zone: The Challenge. *Journal of Shoreline Managenzent* 1: 3-36.

Kirk, R.M. 1987. Managing the Coast. *Southern Approaches: Geography in New Zealand* N.Z. Geographical Society (one) Christchurch.

Knecht, R.W. 1991. UNCED and the Coast. *Inter Coast Network* 16: 1-3.

Kozlowski, J., Hill, G. and Rosier, J. 1986. *Planning with the Environment.* University of Queensland Press, Brisbane. 86 pp.

Lamson, C. 1986. Planning for Resilient Coastal Communities: Lessons from Ecological Systems *Coastal Zone Management Journal* 13: 265-280.

Ledec, G. and Goodland, R. 1988. Wildlands: Their Protection and Management in Economic Development. The World Bank, Washington, DC, U.S.A.

Leitncr, M.L. and Strauss, E.J. 1988. Elements of a Municipal Impact Fee Ordinance, with commentary. *Journal of American Planning Association* 54: 225-231.

Lowry, G.K. Jr 1980. Policy-Relevant Assessment of Coastal Zone Management Programs. *Coastal Zone Management Journal* 8: 227-255.

Lowry, G.K. Jr 1985. Assessing the implementation of Federal Coastal Policy. *Journal of American Planning Association* 51: 288-298

Matuszeski, W. 1985. Managing the Federal Coastal Program. The Planning Years. *Journal of American Planning Association* 51: 266- 274.

Meister, A.D. Economic Analysis of Environmental Impacts and Issues. A Survey of Analytical Techniques. *Discussion Paper in Natural Resource Economics No. 14.* Department of Agricultural Economics and Business, Massey University, North. 71 p.

Meister, A.D. Environmental Regulation and use of Economic Instruments for Environmental Planning and Management: an Overview. *Discussion Paper in Natural Resource Economics No. 15.* Department of Agricultural Economics and Business, Massey University, Palmerston North. 51 p.

Ministry for the Environment 1991a. Resource Management: Consultation with Tangata whenua. Ministry for the Environment, Wellington.

Ministry for the Environment 1991b. Confidential departmental report on SOP 22 18 June 1991. Pp. 28-34. Ministry for the Environment, Wellington.

Ministry for the Environment 1992. The Resource Management Act: An Act for Maori. Ministry for the Environment, Wellington.

Ministry of Transport 1980. *Coastal Zone Managenzent Seminar, Wellington, New Zealand, 1980.* Ministry of Transport, Wellington.

Nachmias, D. 1979. Public Policy Evaluation, Approaches and Methods. St Martins Press, New York. 195 p.

O'Brien, R.J. 1988. Western Australia's Non-Statutory Approach to Coastal Zone Management: An Evaluation. *Coastal Management* 16: 201-214.

OECD 1986. OECD and the environment. OECD, Paris. 220 p.

OECD 1988. Integration in Coastal Zone and Estuary Management: A Project Proposal. Environment and Economics Division, Environment Directorate, OECD, Paris.

OECD 1989. Economic Instruments for Environmental Protection. OECD, Paris.

Penning-Rowsell, E.C., Coker, A., Parker, D.J. and Tunstall, S.M. 1989. Scheme Worthiness. *In* M.C. Barrett, S.W. Huntington, M.J. Wakelin and I.R. Whittle (Eds): Coastal Management. Thomas Telford, London.

Randall, A. 1987. Resource Economics. John Wiley & Son, New York.

Rees, J. 1985. Natural Resources, Allocation, Economics and Policy. Methuen, London. 449 p.

Rosier, D.J. 1991. ESA-PLAN: An Ideal Planning Framework for Ecologically Sensitive Areas. PhD submitted to the University of Queensland. 200 p. + Appendices.

Scimeni, G. 1987. Environmental Policies and Anticipatory Strategies. *IIUG Discussion Paper No. pre* 1987-1. International Institute for Environmental and Society (IIUG), 1-32.

U.E. 1984. Preventative Environmental Policy -concepts and requirements. IIUG Discussion Paper. International Institute for Environment and Society (IIUG).

Sorenson, J.C. and McCreary, S.T. 1989. Institutional Arrangements for Managing Coastal Resources. *Renewable Resources Information Series, Coastal Management Publication No.* 1. Research Planning Institute, South Carolina, U.S.A.

Sorensen, J. 1991. UNCED and the Coast. *Intercoast Network* 16: 4-8.

Townend, I.H. 1986. Coastal Studies to Establish Suitable Coastal Management Procedures. *Journal of Shoreline Management 2:* 131-154.

Walsh, J.P. 1982. The Coastal Zone Management Program. Will Revenue-Sharing Save it. Oceanus 22-28.

Wheeler, B. 1991. Sustainable Intervention and Sustainable Management: Costs, Benefits and the Resource Management. Pp. 27-32 *in:* An address to the *Conference on Implementing the Resource Management Act* 1991, *University of Otago, August* 1991.

Yapp, G.A. 1986. Aspects of Population, Recreation and Management of the Australian Coastal Zone. *Coastal Zone Management* 14: 47-66.