CREATING OUR FUTURE

Sustainable Development for New Zealand

Office of the
PARLIAMENTARY COMMISSIONER FOR THE ENVIRONMENT
Te Kaitiaki Taiao a Te Whare Pāremata
PO Box 10-241, Wellington
June 2002

This report and other publications by the Parliamentary Commissioner for the Environment are available on the PCE's website: http//www.pce.govt.nz

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Acknowledgements
The Parliamentary Commissioner for the Environment and his investigation team would like to thank all those people who took part in interviews and assisted with the research in the preparation of this report.

Bibliographic reference
Parliamentary Commissioner for the Environment. 2002. Creating our future: sustainable development for New Zealand. Parliamentary Commissioner for the Environment, Wellington, New Zealand.

ISBN: 1-877274-03-8

Preface

Sustainability is ultimately about the interplay between people and ecologies. As individuals, families, communities and as a nation, we constantly seek to maintain or enhance our quality of life - a rich mix of basic and more abstract needs. We do this through an increasingly complex socio-political-economic system, the basic design of which is now centuries old.

It is a design that has evolved to increasingly isolate human endeavour from indigenous knowledge of our dependency on the ecological systems (soils, rivers, forests etc.) that sustain us. Ironically the design also impedes us from fully applying some of our new research based knowledge of complex natural, social and economic systems. As evidence of this consider the New Zealand and global struggle to reach consensus on how to address the blinding realities of climate change - a matter in which New Zealand has chosen to lead.

The fundamental task in front of us over the coming decades is to redesign our socio-political-economic system in ways that reintegrate the dependencies between people and our underpinning ecological systems. And redesign we must: firstly, in the way we think about the whole issue of sustainability; secondly, in the way we design for a more sustainable future; and thirdly, in the actions we take. This third step is the hardest since this is where current ideologies, beliefs, value systems, economic theory and ecological constraints ultimately conflict.

This may all seem rather abstract. However, it is the framework within which my team and I have assessed the progress New Zealand has made in implementing Agenda 21 and the sustainable development ideals that emerged from the Earth Summit in 1992.

My focus in this review is on the last decade, with an emphasis on ecologically sustainable development against a backdrop of major environmental protection gains over the previous four decades. The analysis has been done from the perspective that New Zealand has the potential to make the transition to a sustainable development pathway. I believe that we have many of the necessary ingredients: innovative people, a robust democracy, a developed economy, abundant environmental resources, a love of 'team-play' as well as a growing sense of who we are - and there are less than four million of us! We believe this new but challenging development pathway is where New Zealand can and should go.

Our story in this review is New Zealand's journey from 1992 to 2002 in the context of what has been going on in the rest of the world - particularly OECD countries. It is a story that reveals real effort to think, design and do things in the spirit of Agenda 21 and sustainable development. The highlights are mostly community initiatives, some local government efforts and a few 'standout' business efforts.

The big gap in thinking, planning and taking appropriate action until 2000 has been in central government. The ideologies and policies that dominated central government in the 1990s, reinforced by some key business leaders, impeded exploration of new ways of meeting society's needs and developing our wealth creating opportunities in more sustainable ways.

In part, the sustainable development story of the 1990s is also one of confusion about what sustainability is all about. New Zealand made a flying start in the late 1980s with the crafting of the Resource Management Act (RMA), embedding the concept of sustainable management of natural resources into legislation. Ironically, this starting point has contributed to our now being behind many other nations. We are behind in our thinking and in the way we interpret the more holistic concept of sustainable development - a concept that embraces the human (social), environmental and economic dimensions of our

lives. The dominant role of the RMA in shaping New Zealand thinking about sustainability (i.e. it is an environmental matter) appears to have slowed the adoption of sustainability principles into economic and social policies.

Our review of the last decade concludes with the view that New Zealand could have been a leading light on sustainable development by now - but we are not. However, we do believe that the many small initiatives, by communities, leading businesses, local and recently central government, are a good foundation for progress over the next decade. In this report I have recommended actions in relation to a number of areas. These include a sustainable development strategy and framework, research priorities, and ongoing review of central government capacities to integrate activity across the many government agencies.

Finally, I have made a commitment to undertake a further review of New Zealand's sustainable development progress in 2006/7 as a contribution to New Zealand's efforts to reshape our development pathway.

Dr J Morgan Williams
Parliamentary Commissioner for the Environment

Executive Summary

In the South Pacific, a tiny multicultural nation Aotearoa-New Zealand is poised to make the transition to a sustainable development pathway. Dreams of what might be are the fuel of what can be.

New Zealand has most of the ingredients to evolve its social, economic and environmental policies to deliver the qualities of life we aspire to and would wish for our children's children:

- innovative people
- a robust democracy
- a developed economy
- abundant environmental resources
- a love of 'team play'
- a growing sense of who we are
- a low population density (only 4 million people).

This review is a contribution to getting onto the new pathway through the examination of thinking and actions over the last ten years within New Zealand and internationally.

The purpose of this report

The Parliamentary Commissioner for the Environment considered that the lead up to the forthcoming World Summit on Sustainable Development in Johannesburg (26 August to 4 September 2002) would be an opportune time to review New Zealand's progress on sustainable development since 1992, and to explore future opportunities and challenges for further progressing sustainable development in New Zealand.

The Commissioner's interest in sustainable development stems from a number of investigations over the last ten years during which he has found that the linkages between social, environmental and economic policy have not been well developed.

In this review, the Commissioner drew on a number of environmental management performance reports, which he or his predecessor published, as well as a number of other relevant

reports and studies on sustainable development in New Zealand and elsewhere. **A set of criteria (or expectations) was drawn up as a means of assessing progress on sustainability in New Zealand.** This was necessary because of the absence of any Government policy objectives or targets for sustainability against which progress and performance could be determined. The preparations for this report also involved interviewing a range of people from various backgrounds who were asked for their views on sustainable development and factors influencing its implementation in New Zealand.

This report was primarily written for New Zealanders, however, it may also be of interest to international readers. For international readers, less familiar with New Zealand, two matters of 'context' are important. The first is that the Parliamentary Commissioner for the Environment is independent of Government, empowered under the Environment Act 1986 to act as New Zealand's environmental watchdog or ombudsman (see www.pce.govt.nz for more information). The second is that this report is aimed at galvanising New Zealand's will to stride out down the sustainability road. To some readers it may seem overly critical of progress to date. From an international perspective New Zealand may be considered to be clean and green. However, as many New Zealanders know, this is a fragile image, one that owes more to our low population density than to New Zealand doing things very differently from other nations. New Zealand can and will make the transition to a more sustainable pathway.

Sustainable development

The United Nations Conference on Environment and Development (also known as the Earth Summit) in Rio de Janeiro in 1992 was a significant event that marked the beginning of global partnerships for sustainable development. New Zealand, along with many other nations, adopted the 27 principles that constitute 'Agenda 21'. These principles encourage the integration of economic, social and environmental interests to guide decision making towards sustainable development. Sustainable development is a term that has been analysed and interpreted in a number of ways over the last decade, but the definition most commonly referred to, including by the New Zealand Government, is:

> *development that meets the needs of the present without compromising the ability of future generations to meet their own needs* (WCED, 1987).

Sustainable development recognises:

- the finite reserves of non-renewable resources and the importance of using them wisely and, where possible, substituting them with renewable resources
- the limits of natural life-supporting systems (ecosystems) to absorb the effects of human activities that produce pollution and waste
- the linkages and interactions between environmental, social and economic factors when making decisions, emphasising that all three factors must be taken into consideration if we are to achieve sustainable outcomes, particularly in the long term
- the well-being of current and future generations as a key consideration.

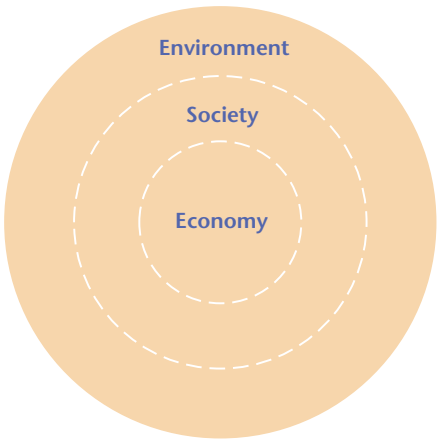
Measuring progress towards sustainable development is complex because it involves measuring a mix of biophysical and ecological realities as well as human values and aspirations. If sustainable development is to be a widely accepted concept and implemented by all sectors of society, it needs to reflect not only society's developmental interests, but also the ecological limits against which the sustainability of developments is determined.

An important aspect of the progression towards more sustainable development is the need for society and governments to clearly recognise the difference between 'environmentalism' and 'sustainable development'. The first can be defined as activism to protect nature from the ravages of

the economy while the second is about redesigning the economy itself. Put another way environmentalism can be considered a movement against pollution, degradation and serious loss of nature while sustainable development can be considered a movement towards new action and behaviours. Until the late 1990s the dominant focus in New Zealand has been 'environmentalism'. We are only now beginning to make the transition to sustainable development and it is generating tensions.

A number of models have been designed to represent the integration of environmental, social and economic dimensions of sustainable development. The one that the Parliamentary Commissioner for the Environment supports as representing the limits within which the economy and society must operate if we are to function in a sustainable way is the strong sustainability model as illustrated below.

Figure 1 Strong Sustainability



This model recognises that the economy is a sub-set of society (i.e. it only exists in the context of a society), and that many important aspects of society do not involve economic activity. Similarly, human society and the economic activity within it are totally constrained by the natural systems of our planet. The economy may expand or contract, and society's expectations and values may change overtime, but to function in a sustainable way we must not exceed the capacity of the biosphere to absorb the effects of human activities.

Sustainability trends and influences

An understanding of the history and nature of New Zealand and New Zealanders is a key component of understanding how sustainable development has been and can be implemented in New Zealand. **This country has many unique environmental, social and economic qualities.** Generally, New Zealanders highly value their environment, especially the ability to access clean water and air and pristine natural areas. A productive and healthy natural environment is a fundamental base to a healthy society and economy. All of this is often portrayed as New Zealand's 'clean and green' image. However, maintaining such an image becomes more and more difficult as economic and social pressures increase. There are significant economic risks for New Zealand if the reality does not live up to the image.

Values, cultural and ethical frameworks are all critical underpinning elements to the implementation of sustainable development. Tangata whenua have strong cultural and spiritual connections with the environment, natural resources and places that need to be respected and provided for. The choices people make, the actions they take and, therefore, the rate of progress that is made towards sustainable development are all influenced by people's underlying values and beliefs. Sustainable development requires different attitudes and ways of thinking (e.g. holistic, systemic) about the nature of wealth, how to maintain natural capital, quality of life and the things that people value.

A variety of drivers (the economy, consumption and production patterns, the media, international commitments) **and various key trends** (globalisation, urban growth patterns, threats to human and ecological health, changes in land use, freshwater resources and air quality and global climate change) also **pose risks to our future environmental sustainability.**

For example, evidence exists that economic growth results in increased consumption and production patterns, increased demands for natural resources and adds to overall environmental stress.

Globalisation exposes New Zealand to a web of international commitments and outcomes over which New Zealand may or may not have direct control or influence. Trade and other activities and relationships bring benefits such as economic wealth, export opportunities and access to new ideas, but they may also bring costs such as biosecurity risks. Global problems such as climate change will affect New Zealand to some extent. However, the way we respond to these problems is partially determined by international agreements. In so doing we tackle the global as well as local impacts.

New Zealand's urban areas, where the vast majority of New Zealanders live and where some of the major effects on other ecosystems are generated, **have not received the attention they need to promote sustainable urban environments and infrastructures.** Demographic trends indicate that pressures on urban environments will increase over the 21st century, and highlight the need to tackle urban issues from a broad sustainability perspective.

A whole range of barriers are getting in the way of making better progress towards the implementation of sustainable development. One of the main ones is the concept of sustainable development itself. It is difficult to understand, especially for those people and organisations that tend to think and operate in quite narrow areas of interest (silo-thinking). Another impediment is insufficient knowledge and capacity to support the implementation of sustainable development. This is knowledge in its broadest sense - research, information, indicators and people with the technical and organisational capabilities. There appears to be a lack of accessible information and a gap in terms of translating information that does exist into material that can be used by the community to facilitate debate and understanding of sustainable development issues. The lack of a full range of established environmental indicators and the absence of indicators for sustainable development has made policy development and measurement of progress in this area difficult so far.

> *The kind of thinking that has got us into this situation is not the kind that will get us out of it.* Albert Einstein.

Leadership in all sectors is critical for any significant progress to be made on sustainable development. Leadership influences the vision and changes necessary to implement sustainable development. Examples of sustainable development initiatives and effective leadership highlighted in this review include:

- Waitakere City Eco-Hospital
- Landcare Research and the Triple Bottom Line
- Redesigning Resources
- Macpac and The Natural Step
- Agenda 21 Forum, Christchurch
- The Big Clean up, Auckland Regional Council

Education for sustainability plays an important role in raising public awareness about sustainable development. **Many participants in this investigation, including students, academics and business people, highlighted the need for better education for sustainable development across all sectors of society.** However, progress in implementing education for sustainability has been slow.

Sustainable development needs to be implemented across a complex network of places and time scales. Different types of actions work best at different levels of organisation and over varying timeframes. For example, waste minimisation initiatives operate well at the individual business and local authority level and produce benefits over a relatively short time frame. In contrast, strategies to deal with climate change are best tackled at the national and global levels to achieve very long term goals.

Initiatives contributing to sustainable development

A number of relatively recent 'environmental' statutes or proposed legislation in New Zealand have incorporated the concept of sustainability. These include:

- Environment Act 1986
- Resource Management Act 1991
- Fisheries Act 1996
- Hazardous Substances and New Organisms Act 1996
- Energy Efficiency and Conservation Act 2000
- Local Government Bill.

A scan of statutes that cover social and economic matters revealed that none of them incorporated the concept of sustainability, indicating that sustainable development may be perceived and categorised as only an environmental management issue.

The contribution that the Resource Management Act (RMA) has made to sustainable development in general, and sustainable management of natural and physical resources in particular, is difficult to determine in the absence of any comprehensive outcome evaluation since the RMA was enacted. Most of the RMA implementation efforts over the last ten years have gone into writing plans and interpreting the Act's provisions, with the result that we know little about its effectiveness to manage natural and physical resources in a more sustainable way. However the RMA has raised the awareness of sustainability of natural resource use.

The RMA has been of mixed benefit to tangata whenua. It recognises the importance of the many relationships between the culture and traditions of tangata whenua and the land. There is more awareness of the practical benefits of more effective involvement of tangata whenua, and the RMA gives recognition to consultation and the ongoing duties of kaitiakitanga. However, many iwi have lacked the capacity to participate effectively in RMA processes and the responses from central and local government agencies to their responsibilities in relation to the Treaty of Waitangi and the interests of tangata whenua have been variable.

Acceptance and advancement of sustainable development by central government has been slow in New Zealand compared with many other OECD countries. It was not until August 2001, some nine years after the Earth Summit, that the Government announced its intention to produce a national strategy on sustainable development. In the meantime, a number of local authorities as well as business and community groups in New Zealand have introduced their own initiatives to implement Agenda 21 principles within their respective sectors. While sustainable development is supposed to be implemented at the local level, **the absence so far of a national strategy has meant that there has been no clear national vision or direction to guide and coordinate local efforts and get the maximum benefit from them.** For example, Local Agenda 21 initiatives can be effective means of implementing sustainable development to achieve local as well as national goals.

The Government has introduced, or has under consideration, a number of strategies and legislation (see figures 2 and 3) that contribute in some way to aspects of sustainable development. The Government's intention is to draw all these together under an overarching sustainable development strategy. In some cases the links between the individual strategies and sustainable development are not clear because they were not developed with sustainability in mind (see figure 4). It would have been more logical to have in place a sustainable development strategy before all other related strategies were considered, so that the links and direction were clear. **Nevertheless the production of a series of strategies in the last two years shows great promise for the implementation of sustainable development in New Zealand.**

Figure 2: Timeline of Strategies and Programmes Related to Agenda 21

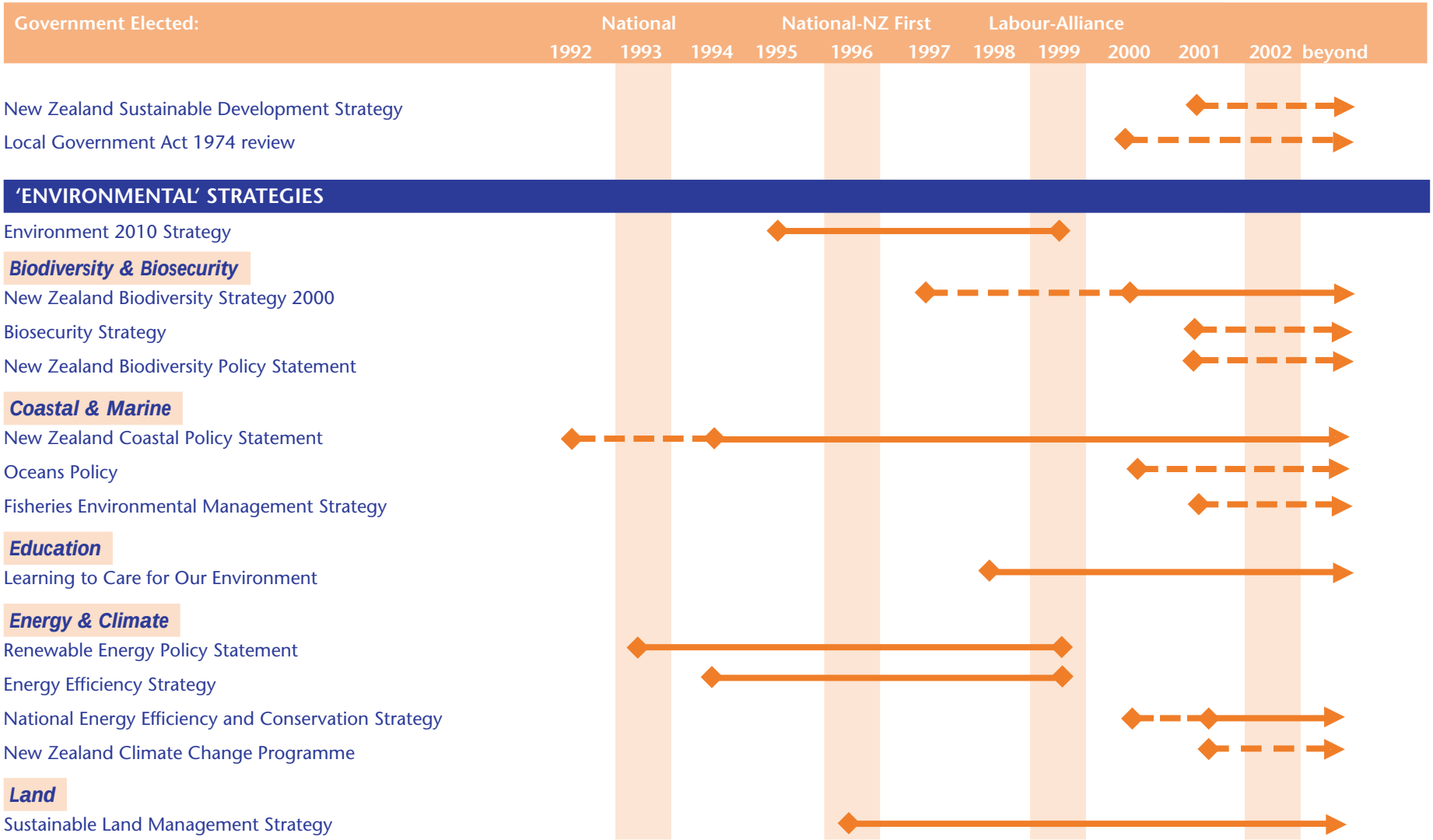


Figure 2: Timeline of Strategies and Programmes Related to Agenda 21 *continued*

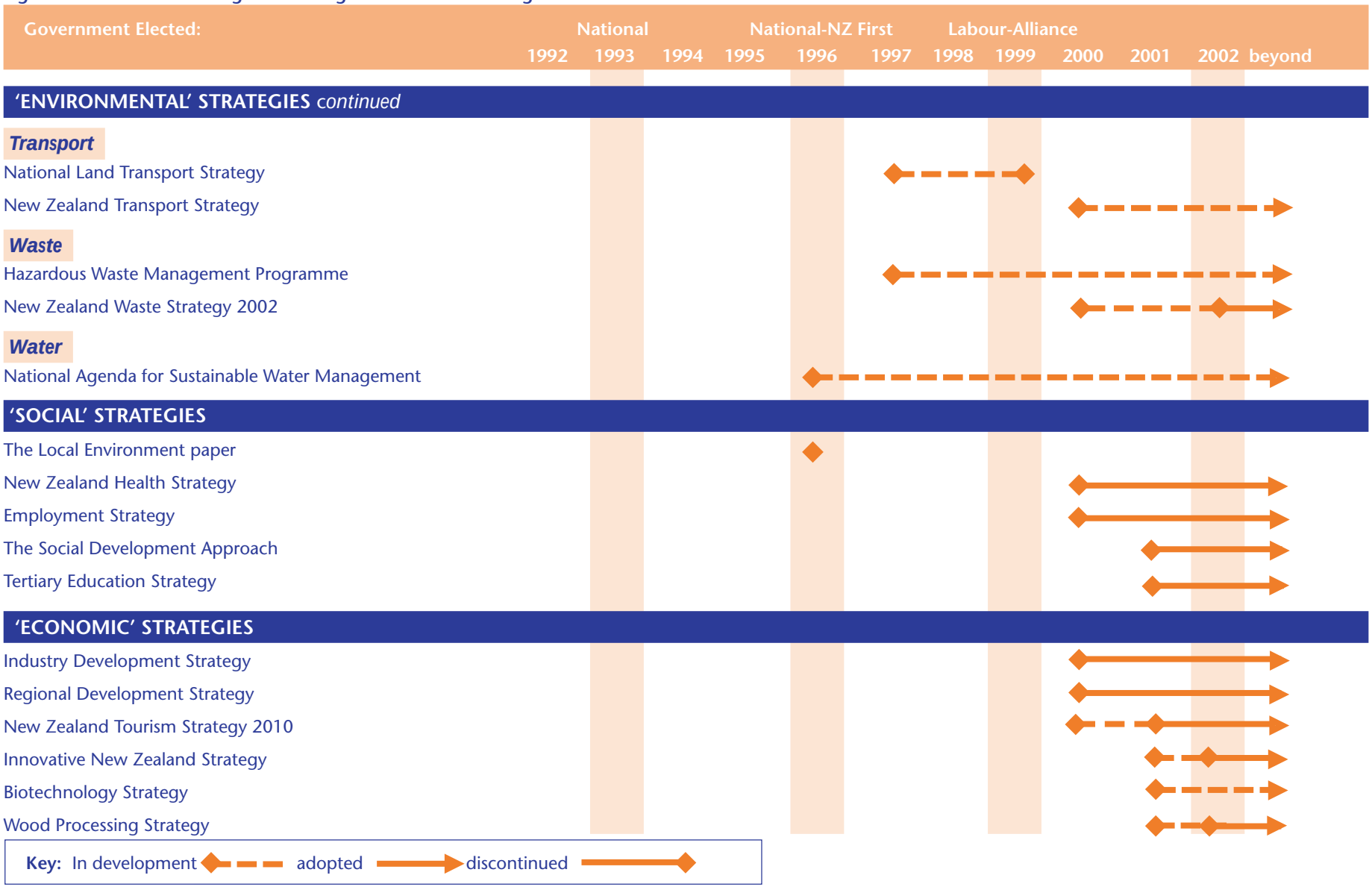


Figure 3: Environmental Management Legislation and Strategies 1990-2002

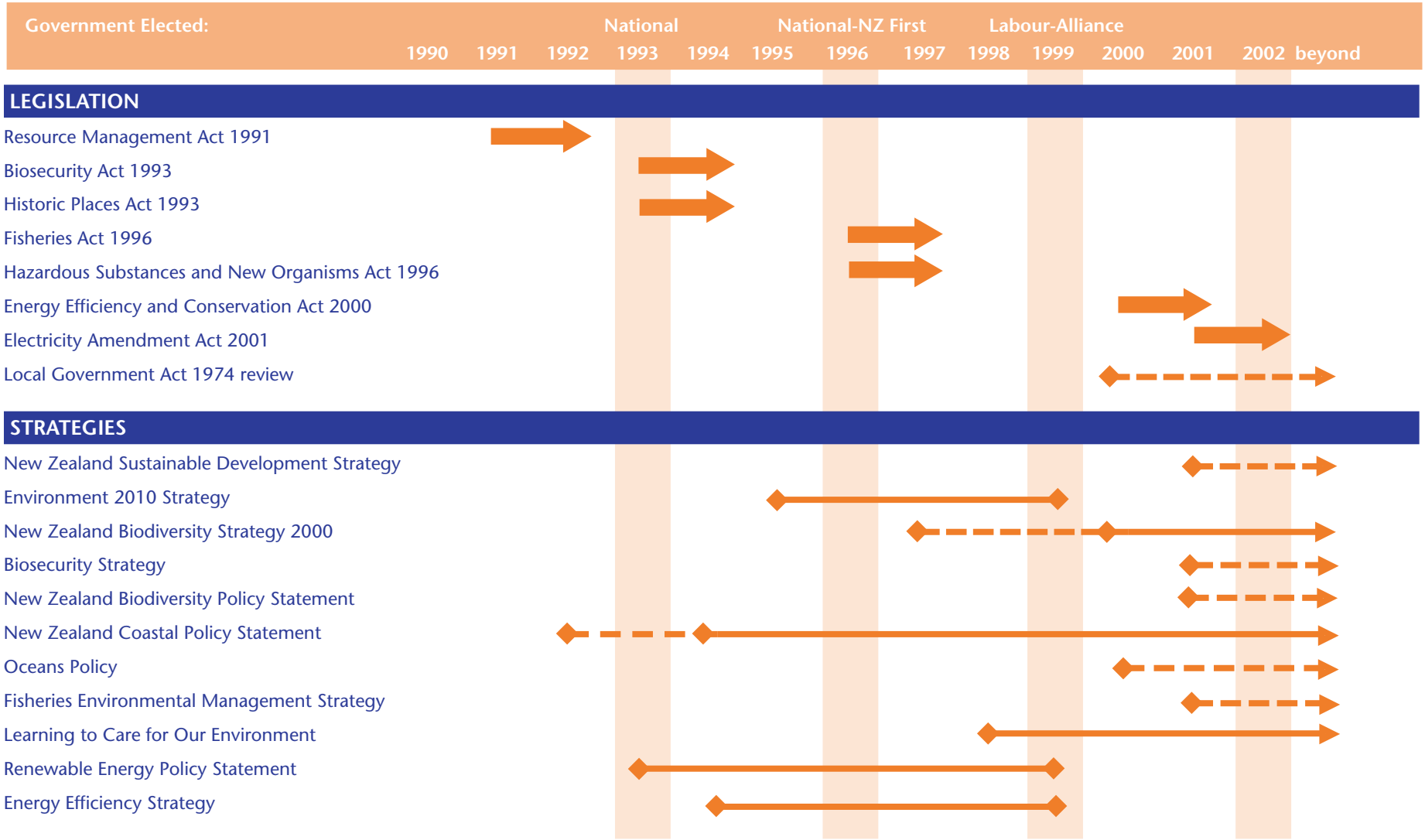


Figure 3: Environmental Management Legislation and Strategies 1990-2002 *continued*

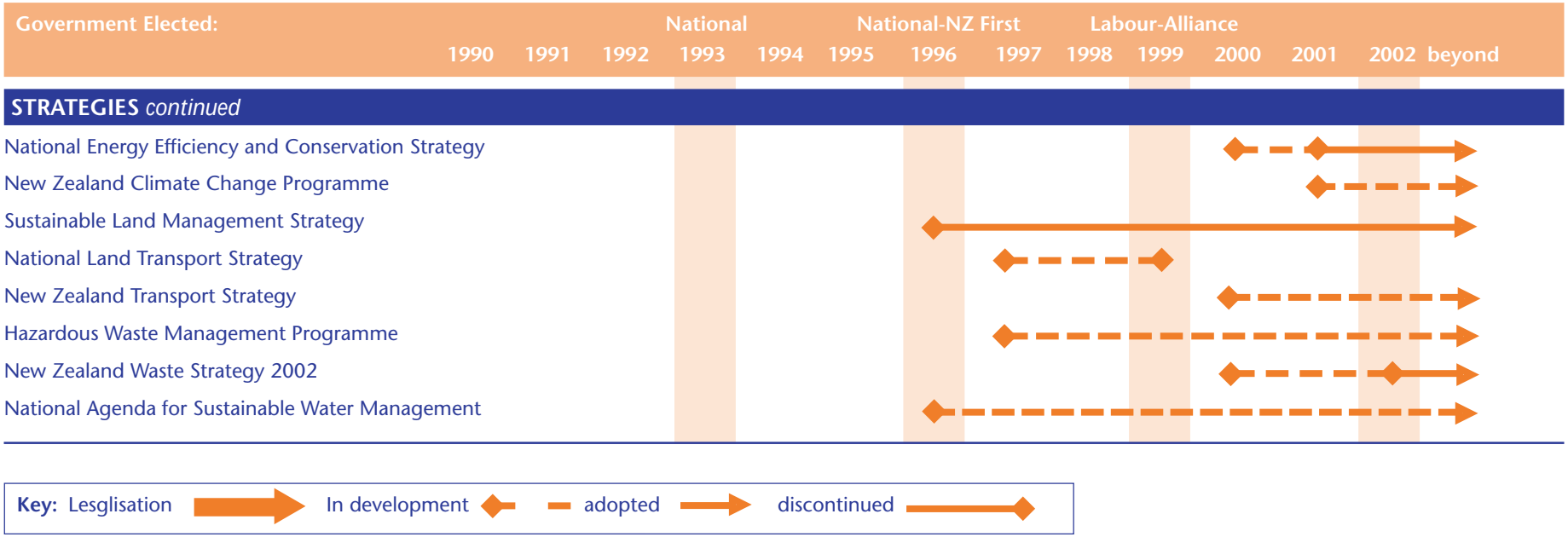
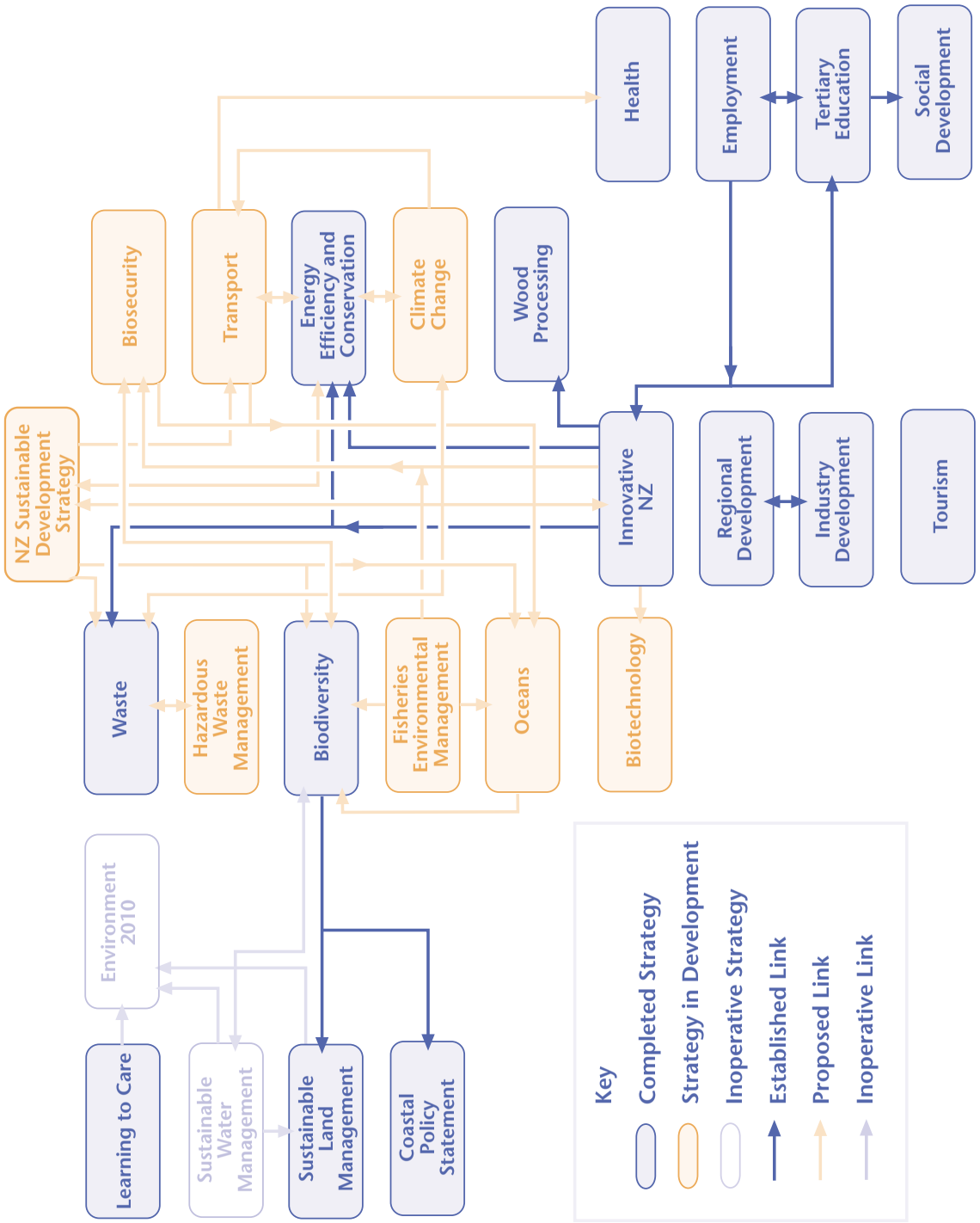


Figure 4: Linkages Between Government Strategies



Successful implementation of sustainable development initiatives among other OECD countries has been the result of efforts to gain public support, and achieve good coordination and integrated decision making. Having the commitment and the capacity to focus efforts towards actions over long-term time frames has also been a major factor. In countries such as the Netherlands, environmental management systems have evolved and broadened to cover sustainable development.

Progress on sustainable development in New Zealand

New Zealand could have been a leading light on sustainable development, given its relatively low population density, overall environmental quality, and its predominantly agricultural and marine-based economy. Instead, sustainable development has not progressed in New Zealand in a coordinated and meaningful fashion over the past ten years. Successive governments have largely ignored the Agenda 21 commitments made back in 1992 and, until very recently, have not provided the leadership necessary to support and guide sustainable development in New Zealand.

However, other sectors, including individual local authorities, business organisations and community groups have made progress with their own initiatives. They have endeavoured to incorporate sustainable development principles into their policies and activities, and have encouraged others to do likewise. It is the 'local initiatives' dimension of sustainability thinking and action that has made the biggest contribution to awareness of sustainable development over the last decade.

The stocktake of PCE investigations over the last decade (see appendix 2) has highlighted a number of problems exacerbated by 'silo' thinking (i.e. focusing only on narrow goals and failing to recognise and take into account the linkages between economic, social and environmental interests). These include:

- poorly integrated decision making
- inadequate cooperation and communication between sectors and agencies
- lack of structural and management incentives to work towards a more collective public good

Another point emerging from the stocktake relates to the sequencing of strategies and legislation that affect sustainable development. While the major environmental management Act (the RMA) was in place by 1991 a number of substantial and important initiatives to develop strategies relating to sustainable development have been initiated only within the last few years. This indicates that policy initiatives were more likely to be driven by reactive responses to relatively smaller issues, rather than by broader policy (sustainability) needs.

A substantial impediment that has existed for much of the past decade has been an ideological commitment to let market solutions and non-intervention by government resolve a wide range of environmental decisions on a case-by-case basis (within the RMA framework). 'Enabling' measures have been preferred over regulations, and little effort has been made to develop other policy alternatives. Market failures have not been adequately factored into policies. This has had the effect of inhibiting initiatives that could have provided broader strategic visions and directions over environmental management. For example, until the 2001 Oceans Policy initiative coherent management of our extensive ocean resources had not been addressed from a perspective of sustainable development.

It is only in recent years that central government has begun to develop various strategies related to sustainable development, and started work on a New Zealand Strategy on Sustainable Development. In retrospect, there is no reason why the process of developing such a strategy could not have commenced soon after the Earth Summit. **A sustainable development strategy is important but it is only a first step. It is a framework for action, not evidence of action.**

The same can be said about all the other environmental, social and economic strategies that have been, or are in the process of being, developed by the Government in the lead up to the World Summit on Sustainable Development. That said, the development of a strategy for sustainable development and other strategies that incorporate sustainability shows great promise for the future in New Zealand.

It is time to look ahead for opportunities to convert strategies into actions and make genuine progress towards sustainability for the benefit of society, the environment and wealth creation in New Zealand.

Future challenges for New Zealand

The challenges and opportunities for progressing sustainable development in New Zealand can be categorised under three headings:

- establishing a vision and framework for sustainable development
- implementing sustainable development
- monitoring and reviewing progress towards sustainability.

Establishing a vision and framework

Sustainable development is not an easy concept to define or communicate, hence the plethora of definitions and interpretations that have evolved over the last fifteen or so years. To make it meaningful and generally acceptable in the New Zealand context, **sustainable development has to be supported by a strong vision and clear goals established through effective public participation processes.** Sustainable development needs to be relevant to, and demonstrate benefits for, all sectors of New Zealand society as well as the ecosystems that we rely on and value.

The Government has identified one of its major economic objectives is to return New Zealand's per capita income to the top half of the OECD rankings and maintain that standing. A major challenge for the Government will be to meet its economic objectives while also maintaining or improving environmental conditions and the health of ecosystems on which so much of our wealth creation activities depend. The economy-environment linkage is strategically very important for New Zealand, as is maintaining the life-supporting capacities of ecosystems, and valuing natural assets in their own right, independent of their ability to supply human ends.

The continual emphasis by successive governments on economic growth as a priority has the potential to accelerate us towards unsustainability if it simply means escalating energy and materials consumption, waste and pollution problems. **Instead, emphasis should be shifted to development that improves quality of life, produces less waste, adds more value to goods and services, and manages in a sustainable way rather than 'quarries' resources.**

There are opportunities to break down barriers to achieving sustainability. These include changing the structure, funding and nature of government departments that encourage them to operate within a narrow focus and to compete in the policy advice they provide to the Government. Improvements have already been identified by a government review. These include integrating service delivery across multiple agencies, addressing fragmentation of the State sector, encouraging strong leadership, and setting up inter-agency teams to deal with operational matters that cross over into each other's areas.

The introduction of sustainability principles into recent legislation such as the Energy Efficiency and Conservation Act and the Local Government Bill is an important step and should be encouraged in other environmental, social and economic legislative reviews or proposals.

Implementing sustainable development

Current trends in consumption of energy and natural resources, production of waste, growth in urban areas, biodiversity losses and biosecurity

threats, land-use and water issues in both rural and urban areas, and air quality in urban areas are all signs that New Zealand is not functioning in a sustainable manner.

Evidence in New Zealand and overseas suggests that one of the major drawbacks to implementing sustainable development has been a general lack of understanding of what the term means in practice. One way of dealing with this is to promote specific activities, such as waste minimisation or energy efficiency projects that in a particular way contribute towards sustainability. Such projects need to have clear, achievable and measurable targets that can be met within a realistic time frame. They need to demonstrate the connection between choice and consequence. Introducing organisations and individuals to such projects and what they can achieve would be more meaningful than endeavouring to influence behaviour by conveying the notion of sustainability in its broadest but vague sense. Other options include the business sector adopting models such as Triple Bottom Line reporting and The Natural Step that raise awareness about sustainable ways of doing business.

Ongoing leadership in all sectors has an important part to play in making progress on sustainable development. Effective leadership is needed to influence, coordinate, support and achieve results that will make a difference. While small groups working in isolation can achieve a lot in their own particular areas of interest, at a strategic level a more meaningful and overall shift towards sustainability is more likely to occur when there is a combined effort led by 'champions' of sustainable development. **Sustainability is not something that a government department, local authority or other public agency has sole responsibility for making happen**, although each one has significant leadership and guidance roles. Sustainability is achieved when organisations, businesses, communities and individuals all take responsibility for the amount of resources they use, the energy they consume, the waste they produce, and the impacts they may have on biodiversity within a supportive and responsive policy framework.

Governments tend to rely on economic incentives to encourage behaviour modification towards more sustainable practices, but **economic instruments on their own are generally not totally reliable as a means of achieving sustainability outcomes**. A package of measures needs to be considered including economic instruments, education for sustainable development and voluntary codes of practice.

It is encouraging to see funding for sustainability research now being made available through the Foundation for Research, Science and Technology. However, if sustainable development is to become a cornerstone of future economic, environmental and social policies, it will be necessary to ensure that within central and local government and within research institutes there is the capacity and people with the capability to make the links between all three dimensions of sustainability.

The forthcoming World Summit on Sustainable Development (WSSD) creates a timely opportunity for the New Zealand media to be catalysts for debate on sustainable development, to provide commentary on what sustainable development means for New Zealand, and to convey expressions of New Zealanders' values related to sustainability.

Monitoring and reviewing progress

Decisions about ecological sustainability rely to a large extent on good information, which in turn is the product of good monitoring and research.

Work is already under way to develop a set of sustainable development indicators for New Zealand. Among other things, sustainable development indicators need to be useful to local authorities that are likely to have increased responsibilities, under the Local Government Bill proposals, to plan for the sustainability needs of

their communities. Another matter that needs to be considered is the inclusion of a statement on the state of natural resources (natural capital) as part of the Statement of National Accounts. Such a statement on the state of natural resources would provide a picture of the extent to which natural capital has been affected by economic and social policy, and would identify critical pressure points that need to be addressed if we are to continue along a path towards sustainability.

The Parliamentary Commissioner for the Environment intends to undertake a further review of New Zealand's progress on sustainable development during 2006/07. This will include progress on commitments made by the Government at the Earth Summit in 1992 and those that will be made at the WSSD in 2002. Stakeholders at the preparatory meetings leading up to the WSSD have called for "action, not more talk".[1] The 2006/07 review by the Parliamentary Commissioner for the Environment will focus primarily on New Zealand's response to such a challenge.

Recommendations

Responsibilities for sustainable development policies and actions come under a range of Ministerial portfolios and local government functions in the environmental, social and economic areas. For this reason, where a recommendation refers to the need to coordinate policy in all three areas, it has been directed to the Prime Minister. In other cases, recommendations have been directed to the relevant Minister or Ministers, or to local government.

Vision and framework for sustainable development

1. That, as part of the development of the proposed New Zealand Sustainable Development Strategy, the Prime Minister develops a range of policy, legislative, economic and voluntary measures designed to progress the implementation of sustainable development. These measures should include:
   a. a position (or vision) statement outlining the goals and objectives of the Government's policy on sustainable development
   b. a timeline for meeting objectives and measurable targets
   c. a timeline and processes for reviewing the position (or vision) statement and associated goals and objectives
   d. adoption of Agenda 21 principles into current and future environmental, economic and social legislation reviews.
2. That the Minister of Local Government, in consultation with Local Government New Zealand, develops guidelines for local authorities on preparing long-term community plans dealing with environmental, economic, social and cultural sustainability, as proposed under the Local Government Bill. Such guidelines should be consistent with the principles of Agenda 21.

Implementation, monitoring and review of sustainable development

3. That the Prime Minister should establish an advisory body responsible for overseeing and coordinating the implementation of the Government's proposed New Zealand Strategy on Sustainable Development, including:
   - actively promoting activities and education programmes that will increase public awareness of sustainable development
   - reviewing government departments' performances in working individually and collaboratively to meet sustainable development goals and objectives
   - providing support and guidance to local government and non-government organisations to ensure effective implementation of sustainable development at the local community level
   - encouraging sustainable development initiatives and partnerships among central and local government, private sector and non-government organisations
   - reviewing sustainability research priorities, capacities to undertake it and mechanisms for the application and adoption of the research.

- monitoring, reviewing and reporting on progress towards sustainable development goals and objectives.
- encouraging local authorities to regularly review and report on the effectiveness of resource management policies and plans, as well as the proposed long-term community plans under the Local Government Bill, in achieving the goals and objectives of the proposed New Zealand Strategy on Sustainable Development.

4. That the Minister of State Services, in consultation with the Minister of Local Government and Local Government New Zealand, identifies the capacity and capability issues associated with implementing sustainable development, and introduces methods to improve skills in integrating environmental, social and economic policy analysis and implementation.

[1] See: http://ens-news.com/ens/may2002/2002L-05-14-01.html.

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Chapter 1 outlines why the Parliamentary Commissioner for the Environment undertook this review and provides some background to the Earth Summit and Agenda 21. It also notes the purpose of the World Summit on Sustainable Development that will be held during August and September 2002. It sets out the terms of reference for the review, including its objectives, methodology and expectations.

Chapter 2 discusses the concept of sustainable development, including its various interpretations, and emphasises the linkages between its environmental, economic and social dimensions. It also highlights the importance of measuring progress towards sustainability.

Chapter 3 looks at trends and influences that affect sustainable development in New Zealand. In order to understand where we should be going, it is important to understand something of our history and the various characteristics of New Zealanders that have influenced and will continue to influence or drive the way we implement sustainable development. It is also important to understand and recognise global issues and trends that will impact on our capacity to implement sustainable development.

Chapter 4 outlines a number of initiatives undertaken by central and local government agencies and other sectors since the Earth Summit. It outlines some sustainable development-related strategies and initiatives underway in New Zealand and elsewhere. By drawing attention to some examples of approaches taken to promote sustainable development and put it into practice, it is intended to highlight the fact that there is support for the concept among a wide range of organisations.

Chapter 5 is a look back. It draws some conclusions about progress on sustainable development in New Zealand based on the review and analysis carried out in previous chapters. In addition, a summary of the report's findings against the expectations identified in chapter 1 is presented.

Chapter 6 is a look ahead. It explores issues that will have a significant influence on progressing sustainable development in New Zealand in the future, and makes recommendations to central and local government.

Section 1

Introduction

The Parliamentary Commissioner for the Environment outlined his interest in the concept of sustainability in his strategic focus for the years 1997 to 2000 (PCE, 1997a, Future directions: strategic focus for the Parliamentary Commissioner for the Environment 1997-2001). The Commissioner identified priority areas for the investment of his resources, drawing attention to his concerns that:

> *The linkages between social, economic and environmental policy have not been well developed. The strategic importance of environmental management for ensuring that the New Zealand economy continues to be sustainable should be recognised in the future...Because of the strong physical environmental focus of the RMA [Resource Management Act], it is unclear to what extent social effects and effects on communities, including economic effects, will be considered and addressed by this legislation or whether other means will have to be used...New Zealand's image as a 'clean and green' place will have to be earned in the future (Ibid: 22-23).*

The United Nations World Summit on Sustainable Development (WSSD) is being held in Johannesburg in August/September 2002. The lead up to the summit and the Government's preparations for it presented the Commissioner with an opportunity to 'stocktake' New Zealand's achievements in sustainable development, particularly the environmental dimension of it, in the ten years since the Earth Summit in Rio de Janeiro. It was also a chance to analyse some of the key driving forces that are leading us towards or away from sustainability, and to look ahead at opportunities to implement sustainable development principles in the future.

This report has primarily been written for New Zealanders, however, it may also be of interest to international readers. For international readers,

less familiar with New Zealand, two matters of 'context' are important. The first is that the Parliamentary Commissioner for the Environment is independent of Government, empowered under the Environment Act 1986 to act as New Zealand's environmental watchdog or ombudsman (see www.pce.govt.nz for more information). The second is that this report is aimed at galvanising New Zealand's will to stride out down the sustainability road. To some readers it may seem overly critical of progress to date. From an international perspective New Zealand may be considered to be clean and green. However, as many New Zealanders know, this is a fragile image, one that owes more to our low population density than to New Zealand doing things very differently from other nations. New Zealand can and will make the transition to a more sustainable pathway.

This report focuses mainly on the environmental dimension of sustainable development and New Zealand's performance in this area. However, it also acknowledges that progress towards sustainable development relies heavily on decision making that recognises environmental, economic and social interrelationships and consequences.

1.1 Background

The Earth Summit in Rio de Janeiro in 1992 was a significant event that marked the beginning of the formal acceptance of sustainable development and the 27 principles that constitute 'Agenda 21'[1] (see appendix 1). The conference recognised that:

> *integration of environment and development concerns and greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future.*

It emphasised the importance of having 'a global partnership for sustainable development'.

Agenda 21 attempted to address the pressing problems of the time and aimed at preparing the world for the challenges of the 21st century. It was considered to be a 'dynamic programme', to be carried out by the various actors according to the different situations, capacities and priorities of countries and in full respect of all the principles contained in the Rio Declaration. It was recognised that Agenda 21 could evolve over time in the light of changing needs and circumstances.

Agenda 21 primarily focuses on developing or strengthening processes that encourage integrating the needs of environment and development with decision making based on sustainable development. This focus on processes covers a range of areas and activities. These include:

- policy-making
- development of management systems
- provision of resources
- capacity and capability
- information gathering and dissemination
- public participation in decision making.

New Zealand adopted Agenda 21 as part of its undertakings at the 1992 Earth Summit. The United Nations Commission for Sustainable Development (UNCSD) has stressed that the 2002 summit will not be an opportunity to renegotiate Agenda 21, but that it should constitute the framework within which progress is reviewed and new challenges are addressed. All countries participating in the WSSD, including New Zealand, are obliged to submit an updated 'country profile' to the UN Commission for Sustainable Development.

Parallel to this process, but independent of it, the Commissioner has prepared this report as an evidence-based, independent (of Government) review of New Zealand's progress in implementing sustainable development (based on Agenda 21 principles) since 1992, and a look ahead at environmental management challenges and opportunities, in the context of sustainable development, facing New Zealand in the future.

1.2 Terms of reference

1.2.1 Objectives of the study

The study set out to:

- review progress on sustainable development in New Zealand, with particular reference to New Zealand's environmental management performance, since the Earth Summit in 1992
- interview and ascertain the views of a wide range of influential individuals and groups, in both the public and private sectors, whose various opinions on sustainable development we wished to explore
- determine future prospects for progressing sustainable development in New Zealand, with a focus on environmental sustainability.[2]

1.2.2 Methodology

The approach taken included:

- identifying subject areas (see below) relevant to Agenda 21, which have been investigated by the Commissioner in accordance with his statutory functions[3]
- reviewing a number of reports, on issues relevant to Agenda 21, published by the Commissioner since 1992
- analysing the concept of sustainable development and its relevance to New Zealand
- reviewing various reports that have commented on sustainable development in New Zealand
- highlighting examples of sustainable development initiatives in other countries
- interviewing a wide range of groups and individuals to discover their views on sustainable development, and to gain insights into various initiatives that have been undertaken to promote and implement sustainable development in New Zealand (see appendix 3)
- analysing future challenges and opportunities for progressing sustainable development in New Zealand, focusing primarily on environmental sustainability.

Agenda 21-related subject areas investigated by the Commissioner since 1992 consist of:

- resource management
- sustainable land management
- tangata whenua
- waste
- energy
- marine environment
- biodiversity and biosecurity
- tourism.

1.2.3 Expectations

In the absence of any benchmark, targets or other objective means of measuring progress on sustainable development in New Zealand, the following expectations were drawn up at the outset of this study as matters that we would have expected successive New Zealand governments to have addressed since the Earth Summit in 1992. These expectations were to be the basis for some of the findings of this report.

1. A national strategy (or equivalent policy instrument) for sustainable development has been established, including clear goals, objectives and targets. Such a strategy places sustainable development in a New Zealand context and outlines the manner in which the principles of Agenda 21 are applied in New Zealand.
2. Appropriate legislative and institutional arrangements have been put in place to give effect to Agenda 21 principles and sustainable development.
3. Evidence exists that sustainable development has been widely adopted and relevant programmes have been implemented by central and local government agencies, and that other sectors have also embraced the concept.
4. A framework of sustainable development indicators and associated monitoring systems has been established to assess progress towards sustainable development.
5. Barriers to achieving sustainable development goals and objectives have been identified and are being addressed.
6. Sustainable development concepts influence social, economic and environmental policy-making.

7. Public awareness programmes and other initiatives have been introduced to promote sustainable development.

1.2.4 What this report does not cover

Sustainable development is, potentially, a vast and all-encompassing topic of investigation. It has not been possible to cover it in entirety. Choices have been made on the basis of the mandate of the Parliamentary Commissioner for the Environment, a mandate that is grounded in environmental management.

It is beyond the mandate and resources of the Commissioner to undertake a comprehensive analysis of how well the social and economic dimensions of sustainable development have been developed and managed over the past decade. Consequently, this report does not attempt to review New Zealand's performance in these particular areas. The Commissioner, however, does recognise that progressing all three dimensions - environmental, social and economic - is essential to achieve sustainable development goals. The report does comment on the social and economic dimensions where they affect, or are influenced by, environmental factors.

This report does not attempt to review New Zealand's performance with respect to all subject areas covered by Agenda 21. As discussed on section 1.2.2, it focuses on those subject areas that have been previously investigated by the Commissioner and those issues raised by people interviewed as part of the investigation. The report also does not report on or review New Zealand's contribution to sustainable development internationally. It focuses on our domestic situation. Throughout this report there are examples of sustainable development initiatives undertaken by business, iwi and community groups. These are examples only. Their use in this report does not necessarily mean that they have been endorsed by the Commissioner.

In its review of aspects of environmental management relative to sustainable development, this report does not attempt to be a comprehensive analysis of environmental management in New Zealand. That is a different task and one that is undertaken from time to time by the Organisation for Economic Cooperation and Development (OECD) environmental performance reviews of member countries (OECD, 1996). Also, since the major PCE investigations invariably originate from a perspective that there may have been an adverse impact on the environment[4], the PCE reports referred to in this review do not necessarily identify all the positive developments in environmental management (relative to sustainable development) that have occurred over the last decade. It should not be assumed that the absence of a particular issue indicates an absence of concern. It may indicate that the Commissioner has not investigated that issue so far, for reasons of resourcing, priority or timing.

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[1] A major achievement of the United Nations Conference on Environment and Development (UNCED) was Agenda 21, a thorough and broad-ranging programme of actions demanding new ways of investing in our future to reach global sustainable development in the 21st century. Its recommendations ranged from new ways to educate, to new ways to care for natural resources, and new ways to participate in designing a sustainable economy. The overall ambition of Agenda 21 was breathtaking, for its goal was nothing less than to make a safe and just world in which all life has dignity and is celebrated. (United Nations web site on the Johannesburg Summit 2002: http://www.johannesburgsummit.org/html/basic_info/agenda21.html).

[2] In the context of this report 'environmental sustainability' includes 'ecological sustainability' (see section 2.2 for further explanation).

[3] See section 16 of the Environment Act 1986.

[4] The Environment Act 1986 empowers the Commissioner to, among other matters, "investigate any matter in respect of which, in the Commissioner's opinion, the environment may be or has been adversely affected". (Section 16(c)(i)).

Section 2

Setting the Scene

'Sustainable development' can be described as the journey towards the elusive goal of 'sustainability'. Both terms have become widely accepted and liberally used, but yet seem poorly understood. They are meaningful but non-specific, indicating an unending quest to improve the quality of our lives and surroundings, and to prosper without destroying resources and life-supporting systems on which we, and future generations, depend.

In a report on urban sustainability issues (PCE, 1998a), the Commissioner found that the concept of sustainable development had not been widely adopted or implemented in New Zealand, despite the enormous influence of the Resource Management Act 1991 (RMA). Only a few local authorities have embraced it.[1] The concept has received little attention at central government level until relatively recently. The lead up to the World Summit on Sustainable Development in 2002 has seen the development of a number of strategies and the proposal to incorporate sustainability concepts in the Local Government Bill.[2]

This chapter explores some interpretations of terms such as 'sustainable development' and 'sustainability', and the use of these terms. It examines issues associated with measuring progress towards sustainability.

2.1 Review of the terms and their significance

2.1.1 Sustainable development

As early as 1915, the Canadian Commission of Conservation recognised the challenge of sustainable development when it stated:

> *We are prosperous now, but we must not forget that it is just as important that our descendants should be prosperous in their turn. Each generation is entitled to the interest on the natural capital, but the principal should be handed on unimpaired* (Commissioner for the Environment and Sustainable Development, 1999).

Since the term 'sustainable development' was popularised in 1987 in the report Our Common Future (WCED, 1987), sometimes referred to as the Brundtland Commission report, many articles have been written on the meaning of sustainability and sustainable development.[3] The Brundtland definition of sustainable development is the one most often referred to, and has been adopted by the New Zealand Government:

> *Development that meets the needs of the present without compromising the ability of future generations to meet their own needs* (WCED, 1987).

The Brundtland Commission noted that a common theme in a strategy for sustainable development had to be the integration of economic, social and environmental considerations in decision making (Mitchel, 1997). One drawback is that the Brundtland Commission report is not specific enough about how sustainability is to be achieved (Ludwig, et al., 1993).

Sustainable development is about reconciling development (the meeting of human needs) with limited natural resources and the capacity of the environment to absorb the effects (for example, pollution). It acknowledges that while growth is necessary to meet basic human needs, it also implies that there are limitations to growth including the finite reserves of non-renewable resources, the capacity of the biosphere to absorb the effects of human activities, and the ability of ecosystems to survive and support life. Sustainable development necessitates a change in the nature of growth, to make it less material- and energy-intensive, and to make it more equitable in its impacts. So the concept of sustainable development makes us think about the environmental implications of any human activity or product, both where it takes place and the impact it has elsewhere (IIED, 2001a).

Sustainable development means recognising and thinking about the linkages between economic, social and environmental factors that influence the decisions we make. It stresses the long-term compatibility of the economic, social and environmental dimensions of human well-being, while acknowledging their possible competition in the short-term (OECD, 2001c). The Organisation for Economic Cooperation and Development notes that short-term competition between goals relating to economic, environmental and social dimensions is one of the main causes of the large gap in the implementation of sustainable development policies.

The UK Government definition of sustainable development, contained in its Sustainable Development Strategy published in May 1999[4], has four objectives:

- social progress which recognises the needs of everyone
- effective protection of the environment
- prudent use of natural resources
- maintenance of high and stable levels of economic growth and employment.

Addressing concerns about the implications of sustainable development, Meadows, et al. (1992) describe a sustainable society in terms of what it need not be:

- sustainability does not mean no growth
- a sustainable society need not be technically or culturally primitive
- a sustainable world would not and could not be a rigid one, with population or production or anything else held pathologically constant
- a sustainable society would not have to stop using non-renewable resources, but would use them more thoughtfully and efficiently
- a sustainable society need not be uniform, undemocratic or unchallenging.

Unsustainable activities include those that involve the destruction of natural habitats (e.g. land clearance), impact adversely on human health, safety or well-being (e.g. the discharge of contaminants into air or drinking water), or threaten the economy (e.g. degradation of New Zealand's agricultural resource base).

2.1.2 Sustainability

Sustainability is an intuitively attractive concept, which has no single and agreed meaning. Like democracy, liberty or justice, the significance of sustainability is probably more fully appreciated when we discover that some aspect of it is under threat or those components that we value most are being eroded or have been lost completely.

Costanza (1994) describes sustainability as a long-term goal that entails maintenance of:

- a sustainable scale of the economy relative to its ecological life-support system
- a fair distribution of resources and opportunities between present and future generations, as well as between agents in the current generation
- an efficient allocation of resources that adequately accounts for natural capital.[5]

Maintaining a society in the long term requires not only a secure and continuing supply of the raw materials, human labour and technology used directly in the production process, but also a similar supply of the conditions that make the process possible. These conditions include natural resources such as clean water, and services such as climate stabilisation and nutrient recycling carried out by forests and wetlands. They also include a healthy population, a reasonable level of social stability, and the provision of well-planned urban and rural space to promote well-being (Huckle, 1996).

In discussing the importance of a 'systems' approach to sustainability, Peet (2000) points out that the pursuit of a goal such as sustainability requires responsible management of a complex system. He explains that the complex system we are to manage is ourselves, individually and collectively. Peet adds that society is a complex system existing within another - the natural environment - on which humans (and other species) depend for the necessities of life. This reinforces the need to be vigilant about changes to the state of the environment that indicate whether or not society is functioning in a sustainable way.

2.1.3 Environmentalism and sustainable development

A number of commentators have drawn attention to a shift in thinking from 'environmentalism' to 'sustainable development'. A recent definition calls environmentalism "a managerial approach to the environment within the context of present political and economic practices" (Dobson, 2000:34). Alternatively, environmentalism can be seen as a movement against (pollution, rain forest degradation, etc.), while sustainability can be seen as a movement towards (action, new behaviours, etc.) (Davis, 2001). In reality, there is probably a continuum from one approach to the other.

It has been recognised that the two moral arguments of 'sustainability' and 'environment' can conflict (Hurka, 1992; WCED, 1987) with some suggesting that the term sustainable development is actually an oxymoron (Hurka, 1992). However, the two components can also be seen to represent a "logical partnership" (Gunderson & Holling, 2002: 76). These authors define sustainability as: "the capacity to create, test, and maintain adaptive capability" while development is seen to be "the process of creating, testing, and maintaining opportunity".

AtKisson (1999) differentiates between the two movements, defining environmentalism as activism to protect nature from the ravages of the economy, while sustainability requires redesigning the economy itself. Lewis (cited in Dobson, 2000: 203) believes that the environmental movement's argument that "economic growth is by definition unsustainable" is flawed. He states that growth in value, rather than volume, is "perfectly compatible with long-term sustainability". People who were interviewed during this investigation also put this idea forward.

While these definitions stem from an economic perspective, they highlight the growing realisation that sustainability is about reforming the systems that created the environmental crises seen today. This includes valuing people as part of the total

environment and therefore integrating the environmental dimension with the social and economic dimensions.

Thus sustainable development can be seen as "a revolutionary concept which requires constraints on market forces and the democratic planning of production to ensure a secure livelihood for all the world's people both now and in the future" (Huckle, 1993).

2.1.4 Views of people interviewed

Among the people who were interviewed prior to the preparation of this report there were, as expected, various views on the concept of sustainable development, reflecting the range of backgrounds and experiences of those people (see appendix 3). It is interesting to note that none of the interviewees considered the concept to be irrelevant or unimportant, but there were some interesting insights into how sustainable development is perceived politically. Some regarded it as a concept that had been 'captured' by environmental groups, resulting in others being generally ambivalent about it. Another view suggested that environmental non-government organizations (NGOs) had not engaged with the broader implications of the concept, instead focusing only on ecological imperatives.

2.2 Environmental sustainability and ecologically sustainable development

The terms 'environmental sustainability' and 'ecological sustainability' are quite often interchangeably used in the context of sustainable development.

The OECD (2001d) has highlighted four specific criteria that can define environmental sustainability:

- **Regeneration** using renewable resources efficiently and not permitting their use to exceed their long-term rates of natural regeneration.
- **Substitutability** using non-renewable resources efficiently and limiting their use to levels that can be offset by substitution by renewable resources or other forms of capital.
- **Assimilation** not allowing releases of hazardous or polluting substances to the environment to exceed the environment's assimilative capacity.
- **Avoiding irreversibility** avoiding irreversible impacts of human activities on ecosystems.

Ecological sustainability implies maintaining the economy, in the long term, at a scale that does not damage the ecological life-support system, and ensures a fair distribution of resources between present and future generations. It highlights the importance of understanding and maintaining ecological processes on which all life depends.

The Australian Government adopted the term 'Ecologically Sustainable Development' (ESD) in its 1992 National Strategy for Ecologically Sustainable Development (NSESD). ESD means using, conserving and enhancing the community's resources so that ecological processes are maintained and quality of life for both present and future generations is increased. It requires changes in the nature of production and consumption to better satisfy human needs while using fewer raw materials and producing less waste.[6]

The concept of ecological sustainability has been established in Australian legislation[7] that deals with the management of natural resources. The legislation contains five 'principles of ecologically sustainable development':

1. Decision making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.
2. If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
3. he principle of inter-generational equity-that the present generation should ensure that the health, diversity and productivity of the

environment is maintained or enhanced for the benefit of future generations.

4. The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making.
5. Improved valuation, pricing and incentive mechanisms should be promoted.

In the context of this report 'ecological sustainability', with its emphasis on the importance of life-supporting systems, is regarded as an integral part of 'environmental sustainability'. The latter may include living and non-living things (for example, structures and other physical resources), and amenity values. So any reference in this report to environmental sustainability includes ecological sustainability.

2.3 Making the connections

Encouraging economic growth, meeting society's needs and protecting the environment are key interests and responsibilities of governments, but the linkages between economic, social and environmental considerations are not always clearly understood, nor purposefully made. The relative priorities of environmental, social and economic policies may vary over time, but this reinforces rather than weakens the need to establish an integrated system of decision making.

In his strategic focus for the years 1997 to 2001, the Commissioner emphasised the strategic importance to the New Zealand economy of having in place an effective environmental management system (PCE, 1997a). Without it our biotic industries and the livelihood of those directly or indirectly involved in this sector will be put at risk.

The connections between human well-being, ecosystem well-being and sustainable development has been described as:

> *... a combination of human well-being and ecosystem well-being. Human well-being is a requirement for sustainability because no rational person would want to perpetuate a low standard of living. Ecosystem well-being is a requirement because the ecosystem supports life and makes possible any standard of living. Although trade-offs between the needs of people and the needs of the ecosystem are unavoidable, they must be limited. For a while, human progress may be won at the expense of the natural environment. It may be necessary to turn forests and wetlands into farms, and farms into towns. But people will not prosper or even survive for long unless the ecosystem is healthy, productive, and diverse. At the same time, it does not matter how well the ecosystem is if people cannot meet their needs. A robust economy and flourishing community are as vital for people's health, wealth, and happiness as a rich and resilient ecosystem. Ultimately, human and ecosystem well-being are equally important, and a sustainable society needs to achieve both together* (Prescott-Allen, 2001:4).

2.3.1 Interactions between environmental, social and economic factors

The linkages and interactions between the key dimensions of sustainable development can be described as follows:

Environment - Economy

The environment provides natural resources, ecosystem services and other benefits to the economy (e.g. tourist attractions, the very basis of our primary production industries and marketing advantages for New Zealand's food exports). Economic activities put pressure on habitats and natural resources, which may result in adverse effects on environmental quality and ecosystem services, or access to and availability of those resources. In some cases the effects of activities on the environment may not appear for some time (e.g. depletion of the ozone layer, and climate change).

Environment - Society

The environment provides life-supporting resources and ecosystems, quality of life conditions, and amenities that are valued by people. Society consumes products and services provided by environmental resources, and generates wastes that are disposed of in the environment. The values of individuals and groups within society drive decisions that ultimately determine the quality of the environment they live in and depend upon.

Economy - Society

Economic conditions determine employment opportunities, living standards and income distribution. The state of the economy influences spending on social security programmes, and is a determinant of pressures on social and cultural conditions. Social conditions influence the quantity and quality of the labour force, including skills, knowledge and creativity, and the choices and opportunities available to individuals and groups within society.

These linkages and interactions highlight the need for decision-makers to think in terms of 'systems' rather than focusing only on the component parts when seeking sustainable solutions. As Hodge et al. (1999) point out, among other things, systems do not necessarily behave simply as the sum of their individual parts and the behaviour of the parts does not necessarily allow the behaviour of the whole to be predicted.

2.4 Characterising sustainable development

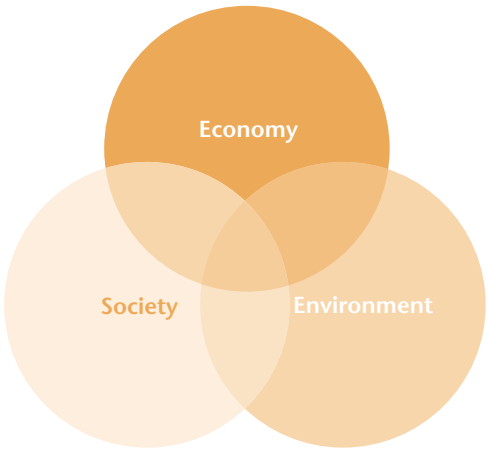
As previously mentioned, there are a variety of interpretations of sustainable development and sustainability. Some regard sustainable development as a matter of integrating social, economic and environmental considerations for decision-making purposes. Others regard it as decision making based on a hierarchy of priorities, or as a balancing of sometimes competing interests.

Some people in the business sector who were interviewed during the course of this project regarded economic growth as the priority in a hierarchy of decision making. This was based on the assumption that if a country is economically sustainable it can afford to invest in programmes that promote social and environmental sustainability. Such a view is sometimes labelled as 'weak sustainability'.

2.4.1 Weak sustainability

Figure 2.1 illustrates the economy, society and the environment as competing interests, and assumes that environmental and social problems can always be solved if the economy is sound (Lowe, 1998).

Figure 2.1 Weak Sustainability



There is some common ground where each of the circles converges, but the main priority in this model is the health of the economy. Economists sometimes refer to this as the weak sustainability model as it requires only that the total capital stock (including man-made and natural capital) be maintained. It assumes that degradation of one group of assets (environmental, social or economic) can be compensated for by improvement in another, and that externalities[8] can be internalised (PRISM and Knight, 2000). Weak sustainability is not concerned with the component parts, just with the whole (e.g. total capital stock). It maintains that the parts can be

substituted for each other, and ecosystem well-being could decline provided human well-being increased by at least as much.

The weak sustainability model fails to acknowledge the ecological constraints that humans, other species, markets, policies and developments must operate within. The 'sustainable management' approach of the Resource Management Act 1991 (RMA) has been criticised for this very reason (Armstrong, 2001).

The New Zealand Business Council for Sustainable Development (NZBCSD) has adopted this approach and described a 'business case' for sustainable development, based on the three pillars of economic growth, social progress and ecological balance.[9] The NZBCSD believes that operating within a well-defined framework of sustainable development helps companies:

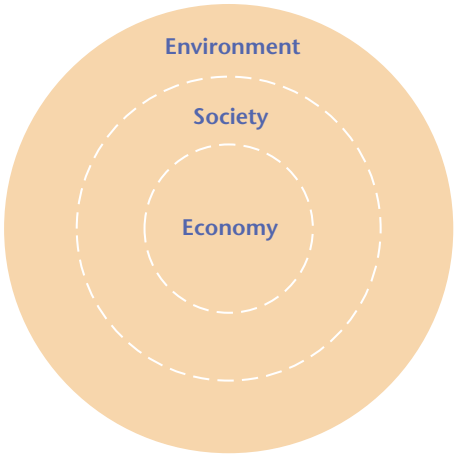
- be more efficient and competitive
- engage in responsible entrepreneurship
- increase their financial return and reduce risk for shareholders
- attract and retain employees
- improve customer sales and loyalty
- grow supplier commitment
- strengthen community relations
- contribute to environmental sustainability.

Knight (2000) points out that sustainable development based on the pursuit of economic efficiency and ecological pragmatism only slows down ecological and social degradation rather than reverses it. In Knight's view, New Zealand currently appears to favour the pragmatic and, therefore, possibly overly conservative route more aligned with the weak rather than the strong sustainability approach.

2.4.2 Strong sustainability

The decision making model illustrated in figure 2.2, sometimes referred to as the ecological model of sustainability, is an illustration of strong sustainability.

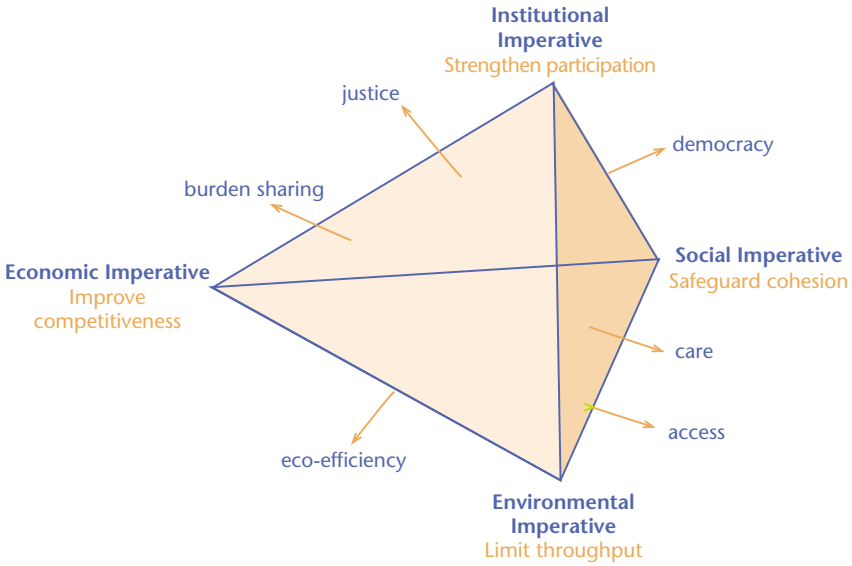
Figure 2.2 Strong Sustainability



This model recognises that the economy is a sub-set of society (i.e. it only exists in the context of a society), and that many important aspects of society do not involve economic activity. Similarly, human society and the economic activity within it are totally constrained by the natural systems of our planet. The economy may expand or contract, and society's expectations and values may change over time, but to function sustainably we must not exceed the capacity of the biosphere to provide for and absorb the effects of human activities. This requires integrating of ecological thinking into all social and economic planning (Lowe, 1998). Strong sustainability requires maintaining the parts (i.e. society, the economy and the environment) in good condition, as well as the whole. One part cannot be substituted for another, and in some situations there is only limited substitutability even within parts. For example, loss of forest in one place should be replaced by the addition of a similar type of forest elsewhere, or receipts from depleting oil should be invested in renewable energy production.

It should be noted that, in the absence of a clear description of the relationships and dependencies it represents, this model can be misinterpreted as showing the economy at the centre of decision making, with ecological considerations being less important and peripheral.

Figure 2.3 The Prism of Sustainability



Additional dimensions to this model have been suggested, including:

- The 'prism of sustainability' (see figure 2.3), which includes an *institutional* dimension with its emphasis on participatory decision making and an inclusive approach towards scientific and practical knowledge (PRISM and Knight, 2000:8).
- A *political* component, including the ability to participate in national and local politics, and to function within a broader political and legal framework that protects civil, political, environmental and resource use rights (IIED, 2001b).
- The moral imperative of sustainability is emphasised by Peet and Bossel (2000). They suggest the need for an *ethical* framework to rationalise social actions and act as a filter for appropriate sustainability indicators.
- In the New Zealand context an holistic approach is taken within Maori society, in which environmental, social, economic and *spiritual* aspects are inextricably fused together (PRISM and Knight, 2000). The absence of this spiritual/cultural component would make any New Zealand model of sustainable development incomplete, and may be inconsistent with the principles of the Treaty of Waitangi. The Local Government Bill, currently before a Parliamentary Select Committee, introduces the ability for communities to promote their *cultural* well-being (in addition to their social, economic and environmental well-being).

All these additional dimensions could be considered sub-components of the social dimension.

2.4.3 Integrated and systems approaches

The outcome of the Earth Summit in 1992 included the recognition that integration of concerns about the environment and development and greater attention to them both will lead to the fulfillment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. Representation of all the components of sustainable development, and their significance, is always likely to be interpreted in different ways to suit the outcome sought by various sectors. However, one of the fundamental principles of sustainable development[10] is the importance of integrated decision making. Adopting a 'systems' approach to analysing problems can enhance this. Systems-thinking involves taking an approach to decision making and problem solving in which interactions and relationships among the constituents of the

system are studied. As pointed out in section 2.3.1, a systems-thinking approach is particularly useful when analysing progress towards sustainability. The links between the environmental, social and economic dimensions can be complex and indirect, and solutions to problems of sustainability may not be obvious through examination only of the individual components. Traditional forms of analysis which breakdown and isolate the component parts can lead to fragmented decision making with potential unforeseen consequences.

Decision makers can be faced with a wide range of biological, social, cultural, physical, ethical and economic considerations. No one component on its own determines whether the system is functioning in a sustainable way. For growth to be sustainable, for example, it must have regard to physical and ecological limitations as well as society's expectations and values.

2.5 Measuring sustainability

An essential part of any strategy for sustainable development is a set of clearly stated goals, objectives and targets to work towards and against which progress can be assessed. Until 2001 there had been no attempt in New Zealand to develop a strategy, let alone measure progress towards sustainable development.

Measuring and monitoring sustainable development in New Zealand is important, not only for central and local government in assessing the state of ecological health, but also for industry as it responds to international market pressures to make environmental performance information more readily available (PCE, 1997a).

A number of principles and methods have been developed to assist decision makers determine the extent to which progress towards sustainable development is being achieved. The features that an assessment of sustainability needs to have include:

- **Systemic** providing a sense of the overall system, not just of the parts.
- **Goal-directed** focusing assessment on improving the condition of people (e.g. meeting needs and having choices) and the ecosystem (e.g. biodiversity).
- **Hierarchical** grouping indicators into sets and arranging them from the particular and local (e.g. healthy communities) to the more general and universal (e.g. climate change). A hierarchy allows indicators to be aggregated, which helps us decide whether the overall system is getting better or worse. (Trzyna and Osborn, 1995).

Indicators of sustainability are important for providing evidence-based information to guide and facilitate decision making. They are a valuable means of communicating information on sustainability provided they address all three components - social, environmental and economic trends.[11]

2.5.1 Designing effective indicators of sustainability

An international workshop convened by the International Institute for Sustainable Development in 1999[12] examined the challenge of assessing progress towards sustainability, focusing on indicators for sustainable development, and the process of channelling measurement results into decision making and effectively communicating the information drawn from the data collected.

Some of the findings and outcomes of the workshop are listed below.

1. A number of new challenges exist for tracking change and assessing progress towards sustainable development, including:
   - To assess progress, indicators of both *substance* (expanded time horizon, broadened scale, more complex system) and *process* (enhanced transparency, collaborative, consensus seeking) are required. This was regarded as a much greater challenge than, for example, tracking changes in the economy or variations in environmental conditions.

- The concept of sustainability is *value-based*, and values can vary over time and between cultures.
- There are many different *scales of analysis*, from local to global, and each should be used to inform the others.
- In tracking change we may be able to identify a *trend* but we may not be able to identify if we are close to a *critical breaking point*.
- A system that meets the *specific needs* of a given country may not be consistent with the needs of a system set up to compare countries.

2. Developing clusters of national-level indicators of sustainable development broadens the focus of measurement beyond just economic factors. These include a balance of signals that effectively track both human and ecological well-being. Clustering of indicators should be done in a relatively straightforward way to facilitate communication. Clusters should be regularly reviewed and revised to ensure they remain relevant.
3. Indicators should capture success as well as negative signs. Both content and form of indicators are important, particulrly in arelation to effective communication.

2.6 Key points

- The Commissioner takes a broad view of sustainability and sustainable development along the lines of the 'strong sustainability' model. This means social and economic development based on long-term prosperity (quality of life) and maximising natural capital while recognising ecological limits to certain types of growth. A focus on ecological sustainability is consistent with the Commissioner's objective of maintaining and improving the quality of the environment, outlined in the Environment Act 1986. Nevertheless, the Commissioner acknowledges that a key feature of the principles behind sustainable development is the need to integrate economic, social and environmental interests to ensure that decisions on resource use are properly informed.
- Sustainable development is an evolving process intended to improve the well-being of society for the benefit of current and future generations. Acting in a sustainable way requires everyone, and especially decision makers, to think about the wider consequences of managing the use or protection of resources. It is not just about meeting narrow, immediate and short-term needs. Decisions need to reflect an understanding of social, cultural, ethical, economic and environmental interests of society, and the interactions and tensions that occur among these interests. Decision makers must take responsibility for actions that might affect future generations who are unable to participate in the decision-making process. Care must be taken to avoid making trade-offs between economic and environmental goals where short-term economic benefits later give rise to longer-term or irreversible environmental impacts and associated costs to society.
- There are no perfect sustainability indicators, but there are indicators that address the critical issues of community sustainability. These indicators help us to understand and measure progress better than traditional indicators such as Gross Domestic Product (GDP).[13]
- The following features represent the important characteristics of effective sustainability indicators:
  - **Representative** They cover the most important aspects of the social, economic and environmental elements, showing trends over time, and differences between places and groups of people.
  - **Reliable** They directly reflect how far the social, economic and environmental objectives are met, based on standardised measurement and consistent sampling procedures.
  - **Feasible** They use data that are readily available or obtainable at reasonable cost and are verifiable and reproducible.
  - **Informative** They provide information for understanding the relationships between the economic, environmental and social elements.

- Measuring progress towards sustainable development is complex because it involves measuring a mix of biophysical and ecological realities as well as human values and aspirations. If sustainable development is to be a widely accepted concept and implemented by all sectors of society, it is essential that a strategy, including goals, objectives and targets, is established. This would need to reflect not only society's developmental interests, but also the ecological considerations that determine the sustainability of those interests. Any sustainable development strategy needs to be accompanied by a monitoring programme to determine progress, and rate of progress, towards sustainable development outcomes.
- The use of clear, understandable indicators of sustainability is important. They are a valuable aid for decision makers and, when illustrated in the form of diagrams and charts, can be a useful means of seeing at a glance the progress being made towards sustainability. They need to be an overall measure of quality of life in its broadest sense, not just a narrow and incomplete measure of prosperity such as GDP. The challenge is to make sustainability indicators more popular and understandable than GDP to the extent that the media focus on reporting on progress towards sustainability rather than changes in GDP.

1 More recently, during the course of this study, we found evidence of some very impressive work on local sustainability being undertaken particularly by some metropolitan local authorities.

2 For example, the Local Government Bill states that 'the purpose of local authorities is to enable local decision-making by, and on behalf of, individuals in their communities, to democratically promote and action their social, economic, environmental, and cultural well-being in the present and for the future' (Clause 8). Among other things, the purpose of the Bill is to 'enable local authorities to play a broad role in promoting the sustainable social, economic, environmental, and cultural well-being of their communities (Clause 3(c)).

3 Some examples of definitions of sustainable development written between 1979 and 1997 can be found at http://www.sustainableliving.org/appen-a.htm.

4 See http://www.sustainable-development.gov.uk/uk_strategy/factsheets/summary.htm.

5 Natural capital refers to renewable and non-renewable natural resources, and to ecosystem services, that make possible all economic activity, indeed all life. These services are of immense economic value; some are literally priceless, since they have no known substitutes. Failure to take into account the value of these limited assets results in natural capital being degraded and liquidated by the wasteful use of such resources as energy, materials, water, fibre, and topsoil. Other types of capital that sustain well-being - because of their levels and distribution - include man-made capital (eg machinery, equipment, structures and infrastructures), human capital (eg knowledge, skills and competencies), and social capital (eg networks of shared values and understanding that facilitate co-operation within and between groups) (see: OECD, 2001b and 2001c).

6 Australian National Strategy for Ecologically Sustainable Development (http://www.ea.gov.au/esd/national/strategy/overview.html).

7 The Environment Protection and Biodiversity Conservation Act 1999 (s 3A) (Australian Federal legislation).

8 Externalities in this context refers to the adverse effects on the environment arising from production and consumption. Externalities include pollution and waste, the costs of which are not fully accounted for in the price and market system. If they were fully accounted for, such costs would be regarded as 'internalised'.

9 See the web site of the New Zealand Business Council for Sustainable Development (http://www.nzbcsd.org.nz/vision.asp).

10 Agenda 21, Principle 4: "In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it."

11 For a more detailed discussion on indicators of sustainability see the background papers associated with this report on the Parliamentary Commissioner for the Environment's web site: http://www.pce.govt.nz/.

12 http://www.iisd.ca/linkages/sd/scipol/

13 For more detailed discussion on the evolution of GDP and other indicators, see the background papers associated with this report in http://www.pce.govt.nz/.

Section 3

Key Trends and Influences

This chapter discusses the broader context surrounding the implementation of sustainable development in New Zealand. In order to understand where we should be going, it is important to understand something of our history and the various characteristics of New Zealanders that have influenced and will continue to influence or drive the way we implement sustainable development. It is also important to understand and recognise global issues and trends that will impact on our capacity to implement sustainable development.

3.1 New Zealand and New Zealanders

3.1.1 Who are we?

New Zealand is an isolated remnant of the prehistoric super continent Gondwana. It parted company with Gondwana some 80 million years ago. This produced species of plants, animals and birds found nowhere else in the world (MFE, 1997). The period of human settlement is believed to be less than 1000 years, beginning with the ancestors of the Maori, followed by Europeans and other ethnic groups from the 1800s onwards. Many of New Zealand's pest animals and weeds were introduced by British immigrants wanting to pursue their traditional gardening, fishing and hunting activities.

Te Tiriti o Waitangi (the Treaty of Waitangi 1840) may be considered to be NZ's founding document. The Treaty records the fundamental bargain between the Crown and Maori - the exchange of the right of the Crown to govern (Article I), in return for confirmation of the rangatiratanga of tangata whenua, and the obligation to protect Maori interests (Article II). The Treaty did not convey any special rights to tangata whenua - rather it confirmed and guaranteed their existing rights to land, forests and their natural resources, including rights in respect of intangible taonga. The principles of the Treaty, as established by the Courts and enunciated by the Waitangi Tribunal,

that are relevant to sustainable development include:

- partnership between the Crown and tangata whenua, to act in good faith and to accord each other reasonable co-operation on major issues of common concern
- active protection of the Maori interest in natural resources, species, places and other taonga, which will require more than passive recognition or processes of consultation with tangata whenua
- management of natural resources, species, places and other taonga according to tikanga
- recognition that taonga include both tangible and intangible dimensions and values (PCE, 2001f).

New Zealand's population is already close to four million. Ethnic composition is becoming more varied and diverse. Maori, Pacific Island and particularly Asian ethnic groups are growing more rapidly than the majority European group. More people are indicating they belong to more than one ethnic group. The 2001 Census showed that more New Zealand residents were born overseas: 1 in 5, compared to 1991 when it was 1 in 6. We are experiencing an ageing of the population although the Maori, Pacific and Asian populations are younger than the European population. New Zealanders are highly urbanised, with about 85% of the population living in towns and cities. The North Island will be home to 77% of all New Zealanders by 2021 with about 56% expected to live in the northern North Island by that time. The Auckland region is projected to experience the greatest population growth.

New Zealand's economy has been dominated by 'quarrying' rather than sustainable use, meaning that key environmental resources were depleted, either because they were non-renewable or because they were overexploited (MFE, 1997). We come from a line of immigrants, first hunters and gatherers, then pioneers and exploiters of natural capital. All have contributed to environmental modification including species extinctions, introduction of pest species and removal of forests.

Since the 1960s, New Zealand's economy has been developing from a 'one-legged animal', dependent on pastoral industries, to a 'four-legged beast'. The three new limbs are non-pastoral primary industries such as forestry, fish and horticulture, manufactured exports, and the exports of services, particularly tourism (Belich, 2001). Our agriculture and forestry is based almost exclusively on imported plant and animal species. Today New Zealand is a small trading nation with a GDP per capita which places it amongst the wealthiest nations in the world. This is despite the fact it has slipped from amongst the highest in the world in the 1950s to 21st in the OECD by 2002. Our comparative advantage as a trading nation continues to be strongly influenced by farm-based commodities that make the capital base of our environmental resources critical. Natural capital contributes some 20% of the per capita wealth in New Zealand whereas, in North America and Western Europe, it contributes 5% and 2% respectively (Statistics New Zealand, 2000).

3.1.2 Values and ethics

Values and ethics form an important part of what makes New Zealanders who they are. The underlying values and beliefs of people influence choices that are made and actions taken and, therefore, the rate of progress towards sustainable development. Several participants in this project highlighted the ethical or values base of our actions and suggested the need for more of an ethical component to education to expand understanding and appreciation of values and ethics.

The United Kingdom Royal Commission on Environmental Pollution states in its 21st Report:

> *We understand values to be beliefs, either individual or social, about what is important in life, and thus about the ends or objectives which should govern and shape public policies. Once formed such beliefs may be durable. It is also characteristic that they may both be formed and modified as a result of information and*

reflection. Environmental and social values, in particular, are not necessarily preformed or fixed but, for many people, emerge out of debate, discussion and challenge, as they encounter new facts, insights and judgements contributed by others[1] (PCE, 2001e).

Sustainable development requires people to actively think about and look for better ways of doing things. Langhelle (1999) suggests that 'sustainable' denotes the ethical component of sustainable development. Ethics requires inter-temporal justice along with the integration of all three concepts of economy, society and environment. Peet (2000) proposes an ethical principle for guiding sustainable development indicators as: "All people have their basic needs satisfied, so they can live in dignity, in healthy communities, while ensuring the minimum adverse impact on natural systems, now and in the future".

'Sustainable' also requires us to address the needs of future generations and intergenerational equity. But what are the needs of future generations? While specific future preferences and wants (as opposed to needs) may be hard to determine, it is reasonable to assume that basic goods such as food, clean water and energy will be future needs. Internationally, reasonably foreseeable needs have been recognised as including the right to life, property, culture and health. There is general agreement that responsibilities to the near future are strong but debate exists over obligations to the far future (PCE, 2001f).

Any definition of sustainable development needs to reflect the values of the society or culture concerned. Within New Zealand that includes the values and ethical concerns of tangata whenua. Some values and ethics of Pakeha New Zealanders may be similar to those of tangata whenua, even though there are differing underlying cultural values. Many Maori "view themselves as part of the natural world and ... [believe that] the people, the land, the sea, the forest and all living creations are all members of the same family" (RCGM, 2001 Appendix 2: 265). Western cultural traditions have generally embraced more anthropocentric and modernist values (Huckle, 1996).

Values, beliefs and expectations can at times appear to be in conflict, giving rise to the need for on going debate and discussion to clarify and resolve conflicts. For example, participants in this investigation highlighted New Zealanders' strong sense of private property rights that can, at times, be at odds with their desire for a high quality environment. The argument, "I should be able to do what I like on my property" has been heard often enough in the context of RMA processes and has at times contributed to poor environmental outcomes. Some people suggested that there needs to be recognition of rights other than those of individual property owners, such as the rights of neighbouring property owners to amenity and landscape values, future generations and other species that share our environment.

This diversity of values highlights the need for more widespread discussion, agreement and understanding of the need to move away from unsustainable development patterns. Without changes in values, people will not demand goods and services that are produced in a more sustainable way and it will be business as usual (Lerner, 1998). Many people simply remain unconvinced that sustainability has any relevance for them (PRISM and Knight, 2000). Others are convinced but are unsure how to go about putting it into practice. However, there is evidence that much is being achieved quietly by groups and individuals who do not necessarily label their actions as sustainable development.

Values in decision making

In general, decision making is a matter of choosing between a number of predetermined alternatives, but values are more fundamental to the decision than are the alternatives. Value-focused (or constraint-free) thinking, in the context of sustainable development, involves identifying a desirable end point and working to

make it a reality. In contrast, alternative-focused thinking involves starting with a limited and readily available set of options and adopting the best of the lot. Keeney (1992) expresses the view that one of the main driving forces for decision making should be values. Keeney maintains that focusing early and deeply on values when facing a difficult problem will lead to more desirable consequences in the long term. Peet (2001) also asserts there is always a moral and ethical dimension to policy making.

As an alternative to forecasting futures from existing/known alternatives, the Natural Step framework uses explicit values and scientific criteria to envisage a sustainable future state, then works backwards to identify logical steps to take toward it.

Environmental values in New Zealand

New Zealanders do value their environment and have ethical concerns with regard to their interactions with it. This is evident in the many submissions received in public consultation procedures regarding issues such as the creation of the New Zealand Coastal Policy Statement in the early 1990s, the recent Oceans Policy process and the Royal Commission on Genetic Modification (RCGM). An international study undertaken in 1997 found that New Zealand was among the populations that most strongly favoured environmental protection over economic growth (Environics International, 1997).

A number of consultation processes and studies have been carried out to find out the range of values that New Zealanders place on the environment. The next sections examine some recent attempts to determine these values and the perceptions that people have of the state of the New Zealand environment.

Royal Commission on Genetic Modification

Expressions of the extent to which New Zealanders value their environment can be seen in the range of comments in submissions to the Royal Commission on Genetic Modification during 2000/01 (RCGM, 2001). The Commission had "given much thought to the values New Zealanders hold" and acknowledged the "values held by Maori add special emphasis to the ethical and cultural objections many people have to the new [GM] technology" (Ibid:3). The Commission devoted a complete chapter (Chapter 2) to 'a shared framework of values'. This included comments such as:

> *Values are often hidden or unnamed, and when this happens there is a danger of becoming lost in a debate about strategies and losing sight of what we ultimately want to achieve (p.11).*

The Commission identified seven values pertinent to its report. In summary, these are:

- **The uniqueness of Aotearoa/New Zealand** recognising New Zealand's unique features such as its relatively low population density, and its ecosystems, flora and fauna.
- **The uniqueness of our cultural heritage** recognising the significance of the Treaty of Waitangi and the essential element of Maori heritage in the New Zealand culture of today.
- **Sustainability** recognising the need to sustain our unique but fragile environment for generations yet to come, and that an environment that is cherished and cared for is not just a survival mechanism; it is for many also a source of spiritual and cultural hope.
- **Being part of a global family** recognising that to be geographically isolated is not to be isolationist. New Zealanders are very much world citizens in terms of travel, trade, and partnerships of knowledge and endeavour, sharing in global developments and having the capacity to exercise leadership.
- **The well-being[2] of all** recognising that economic and social goals are not mutually exclusive but symbiotic. A strong economy makes possible the provision of effective educational, health and social systems, and a population that has benefited from those systems contributes in turn to a strong economy.

- **Freedom of choice** recognising that in a democratic nation freedom in diversity requires a flexible and co-operative spirit to ensure that as far as possible everyone's freedoms are maintained.
- **Participation** recognising that a democratic nation requires effective systems of consultation and shared decision making, and that national policies are most likely to succeed when they arise out of processes of participation.

Ministry for the Environment's Rio+10 community programme

During the period May to July 2001, the Ministry for the Environment (MFE) sought public views on the state of the environment and priorities for environmental sustainability.[3] This was done through its 'Rio+10 community programme', which involved the distribution of information packs and a series of public debates. Of the 3,588 responses received by MFE, 65% thought that New Zealand had not made a strong enough commitment to dealing with environmental issues in the past ten years. The top five issues seen as requiring high priority action were:

- having healthy streams, rivers and lakes
- reducing waste
- having clean beaches and coastal water
- having clean air
- managing toxic chemicals.

The majority saw global warming, healthy streams, rivers and lakes, and clean air as issues where progress had been unsatisfactory.

Perceptions of the state of New Zealand's environment

Lincoln University published a report in 2001 (Hughey et al., 2001) as part of a long-term project to determine people's views about the state of New Zealand's environment. The aims of this research were to measure, analyse and monitor changes in New Zealanders' perceptions, attitudes and preferences towards a range of environmental issues, ultimately contributing to improved state of the environment reporting.

Among the main findings of the 2001 report were:

- On average, New Zealanders consider the state of their environment to be adequate to good.
- Many New Zealanders still think the country is clean and green.
- While the environment overall and the urban environment in particular are thought of very highly, the same findings do not occur for a number of other resources. Notably the beach and coastal environment and marine fisheries are considered to have declined in condition in recent years.
- New Zealand's management of the environment is not highly rated, with the lowest ratings going to the management of farm effluent and runoff, the use and disposal hazardous chemicals, air quality, coastal water, beaches, marine fisheries and the change in management of those resources over the previous five years.
- Pests and weeds, dumping of solid wastes, hazardous chemicals, sewage and stormwater are perceived to be significant causes of damage to many parts of the environment.
- The public gave highest significance to more expenditure on pests and weeds, endangered species, air quality and fresh water.

When the study compared the public's perception of the state of the environment with the actual results from scientific monitoring of the environment, it found the following divergence that indicates a need to provide more information to the public about the scientific state of the environment:

- The actual state of soil and fresh water is worse than the 'good to adequate' rating given by respondents.
- The state of marine fisheries is better than the perception held by the public.
- The study also found it surprising how high a rating New Zealanders give to the natural environment in towns and cities.

New Zealanders and the environment

A survey by Massey University Department of Marketing (Massey University, 2001) identified that most New Zealanders are concerned about

environmental problems, and believe the environment is under threat from pollution of waterways, air pollution from cars and industry, waste produced by households and businesses, and by the greenhouse effect.

The survey found that there is a fairly widespread belief that New Zealand's 'clean green' image is a myth and that our small population is the only reason we are cleaner than other countries.

Other findings from the survey include the following:

- What New Zealanders value most about the environment is clean, clear air and clean, unpolluted water in lakes, rivers and the sea.
- Many placed a high value on safe towns and cities, beautiful scenery, national parks, and healthy soil, unpolluted with chemicals. But less value is placed on New Zealand's cultural heritage.
- Most New Zealanders express concerns about the effects of economic growth and progress on the environment.
- While New Zealanders' concerns for the environment are clear, their behaviour and attitudes suggest that the environment is less important to New Zealanders now than in 1993.
- Ultimately, we are all responsible for the environment, and we may have to accept some financial or other sacrifices in order to protect it.

Environmental concerns in the Waikato

The Waikato Regional Council undertakes telephone surveys of approximately 1000 of its constituents every two to three years, to gauge people's understanding, knowledge, actions and attitudes towards the environment. They also aim to raise awareness of environmental issues so people understand how their actions impact on the environment. The 2000 survey found that the environmental issues of most concern to public respondents were water pollution, waste disposal and general pollution. This was only slightly different from the 1998 survey, in which air pollution replaced general pollution in the top three. While not debating these rankings, in reporting the results of the survey the Council highlighted the need for education to inform citizens of other important issues[4].

Summary of the four surveys

The areas of concern common to all four surveys mentioned above include:

- water quality in lakes, rivers and the sea
- air quality
- waste and hazardous materials.

However, there are clearly some differences between public perceptions of, and scientific evidence on, the state of the environment, highlighting a need for improving public awareness of the actual quality of the environment. There is also a significant difference in two of the surveys' responses to the country's clean green image. In one, the image is seen as a reality, while in the other it is seen as a myth. Irrespective of whether or not this can be explained by how the question was phrased in each of the surveys, the difference in responses shows the tenuousness of relying on image alone.

Values change over time, and what is acceptable to this generation may be regarded as totally unacceptable to later generations. While we cannot predict or make decisions based on the unknown values of future generations, we should not make it impossible for them to modify decisions and trade-offs made today.

3.1.3 Legacies of the past

As part of the investigation for this report, a stocktake of New Zealand's environmental management systems was undertaken based on previous PCE investigations (see appendix 2 for the full stocktake discussion). A number of key findings for New Zealand's future sustainability arise from that stocktake.

The Commissioner's (PCE,1999b) wider investigation of the management of New Zealand's marine world outlined "a picture that is full of opportunity, yet deeply disturbing in its limited

effectiveness and capacities to date." The management systems in place do not equate to the sustainable management of the marine environment as a whole. However, a number of Government initiatives such as the Oceans Policy are underway aimed at addressing these issues (see appendix 2 section A2.2.3). Biodiversity is continuing to decline despite a wide range of Government initiatives (see appendix 2 section A2.2.5).

A number of major biosecurity investigations by the Commissioner focused on the environmental management of pests (invasive alien species) that threaten indigenous biodiversity (see appendix 2 section A2.2.7).

The Commissioner's investigation identified strengths and weaknesses of the biosecurity system then outlined a number of opportunities for its improvement. These were to:

- develop numerous 'lines of defence' against unwanted organisms, including off-shore preventative measures
- broaden membership of the Biosecurity Council
- improve coordination and co-operation between agencies
- develop risk management principles
- strengthen monitoring, surveillance research and intelligence systems, particularly in the Auckland region
- establish more partnerships
- develop a 'learning by doing' approach to managing pest and disease incursions to improve operational success rates.

New Zealand is now a highly urbanised society with over 85% of the population living in urban or suburban environments. (The global average for all countries is 50%.) The successful management of its cities can be seen as a challenge to New Zealanders to achieve sustainable urban development, recognising that cities are, in effect, very complex, highly managed ecosystems. The first PCE investigation of the management of the urban environment (PCE, 1998a) found that:

"With a few notable exceptions at the city level, the concept of sustainable urban development is largely being ignored in New Zealand, with a lack of leadership and vision." (See appendix 2 section A2.2.9 and chapter 3 section 3.3.2 for further information).

The Commissioner's energy report (PCE, 2000b) concluded that in response to international agency recommendations and an analysis of Environment 2010 Strategy actions, little progress had been made in a large number of areas concerning energy efficiency and renewable energy. All agencies had paid insufficient attention to renewable energy issues and energy efficiency issues associated with the transport sector. Lack of action, despite the extensive analyses that had been done (14 major reports) suggest that deep ideological debates have impeded and ultimately constrained Government investment and willingness to sign off on policy initiatives (see appendix 2 section A2.3.1). Recent Government initiatives seek to address these issues (see chapter 4).

The management of waste has been the subject of a number of public reports throughout the 1990s including PCE investigations. The 1996 OECD review of New Zealand's environmental management (OECD, 1996) comprehensively criticised New Zealand's "poor performance in waste management with respect to inconsistent policies between local authorities, lack of incentives, piecemeal approach, inadequate legislation, limited information, and lack of treatment and disposal facilities". The State of the Environment report (MFE, 1997) concluded that the scale of the hazardous waste problem was poorly understood, badly underestimated and prone to flawed management.

The Commissioner's assessment of progress in 2001 with the management of hazardous waste showed that reasonable progress had been made. Despite this progress, the broader goals of the Hazardous Waste Management Programme had not been achieved as planned after three years. Evidence of improved systems or outcomes is

unlikely now until 2005 or beyond. Fortunately, the Ministry for the Environment has clearly identified key milestones for the programme and these will be useful for measuring the programme's progress and outcomes (see appendix 2 section A2.3.3). The new New Zealand Waste Strategy that was launched in March 2002 offers an opportunity to put into practice a series of actions that are essential to stop, and then reverse, the inexorable accumulation of waste that degrades ecosystems and despoils landscapes (see appendix 2 section A2.3.4).

Despite the economic benefits, there is a wide range of environmental effects associated with the tourism sector, some of which have the long-term potential to seriously damage both the environment and the industry. A PCE investigation into the environmental effects of tourism (PCE, 1997c) identified serious shortcomings in information for the tourism sector and its associated environmental effects. Overall, the investigation concluded that the government system for the management of tourism is fragmented. There is poor communication and coordination between different agencies, especially between those agencies that promote tourism and those that manage the environmental effects associated with it. Government agencies have very little ability to influence the direction of the tourism industry, and thus its effects on the environment. The Government subsequently initiated the development of a New Zealand Tourism Strategy in 2000 which was adopted and implemented in 2001 (see appendix 2 section A2.3.5 and chapter 4).

The Resource Management Act (RMA) became law in August 1991 establishing a planning framework, the purpose of which "is to promote the sustainable management of natural and physical resources." While the legislation is quite justifiably regarded as innovative and far-reaching, its implementation was poorly supported by central Government until the late 1990s. In 1998, the Commissioner noted that the extensive criticism of the RMA had largely been about process (time and cost issues relating to resource consents) while "the merits of advancing sustainable development and improving environmental management appear to be largely forgotten" (PCE, 1998e). There has been little guidance from central government, for example, in the form of national policy statements or national environmental standards, which could have been expected to address a number of these problems. Only recently has attention been given to the quality of environmental outcomes (see appendix 2 section A2.2.1 and chapter 4).

These legacies of past actions and approaches to environmental management are issues which need to be addressed and resolved as part of New Zealand's approach to sustainable development if we are to become more sustainable in the long run. Overall while there have been successes in environmental management, the underlying causes of unsustainability remain to be resolved. As noted above and discussed in more detail in Chapter 4 a number of Government initiatives are underway which, if properly coordinated and integrated, should contribute to this.

3.2 Driving forces

This section examines some of the underlying driving forces (drivers) of the pressures on the environment, and describes the links between the driver and the environment and how that might affect the implementation of sustainable development. It also discusses some of the ways in which these challenges are being addressed both here and overseas in terms of implementing sustainable development. The lack of any driving force (positive or negative) is also important, implying that something is not happening which needs to happen, and is dealt with in section 3.4 gaps and barriers.

The particular focus of this section is on how these driving forces affect the environmental component of sustainable development while acknowledging that they may also have profound

effects on the social and economic components of sustainable development. These drivers could be either negative in the sense that they exacerbate the conditions which have given rise to the need for sustainable development or positive in the sense that they encourage the implementation of sustainable development. Driving forces include those actions, institutional structures, values, policies, legislation, leadership and groups that influence the application of sustainable development. The New Zealand situation with respect to legislation and policies that promote sustainable development (important drivers of change) is discussed in chapter 4.

The OECD suggests that, internationally, the main drivers affecting the environment and causing change include economic drivers (economic growth and development, trade and investment liberalisation), social drivers (demographic and labour force developments, and consumption patterns), and technological innovation (OECD, 2001a).

3.2.1 The economy

A key to sustainable development is integration of social, economic and environmental concerns. Sustainable development requires acknowledging and understanding all three areas, the linkages between them and finding ways of achieving positive outcomes in all three areas. Economic systems globally do not tend to value and price ecosystem services. We buy and pay taxes on land but not on air or the assimilative capacity of the environment. An analysis of the Government strategy *Growing an Innovative New Zealand* (2002) indicates that the economy will take priority over the other two when key decisions are being made. The strategy sets out the framework Government is following to achieve a number of economic and social goals to create an innovative New Zealand. While noting the need for integration of the "economic, environmental, and social pillars of sustainable development" (New Zealand Government, 2002:12), the key objective of the strategy is "to return New Zealand's per capita income to the top half of the OECD rankings and maintain that standing" and the bulk of the document is devoted to economic concerns (see also chapter 4).

A common view from some people, mainly from the private sector, who were interviewed during this investigation is that New Zealand must improve its economic performance (i.e., increase GDP) before it can address social and environmental sustainability. The ideas which underpin this thinking derive from standard neoclassical economics: the economy is the total system, and nature, to the extent that it is considered at all, is a sector of the economy, (for example, the extractive sector - mines, wells, forests, fisheries, agriculture). If the products or services of the extractive sector should become scarce, the economy will 'grow around' that particular scarcity by substituting the products of other sectors. If the substitution is difficult, new technologies, will be invented to make it easy (Kibert, 1999).

Ecological economics offers a more complete economic framework. Ecological economics suggests that the environment physically contains and sustains the economy by regenerating the low-entropy inputs it requires, and by absorbing the high-entropy wastes that it cannot avoid generating, as well as by supplying other systemic ecological services (Kibert, 1999). The economy is therefore a subsystem of a larger system that is finite, non-growing, and materially closed. Growth can become uneconomic when, at the margin, it increases environmental and social costs more than it increases production benefits. These include:

- the costs of depletion
- pollution
- disruption of ecological life-support services
- sacrifice of leisure time
- disutility of some kinds of labour
- destruction of community in the interests of capital mobility

- takeover of habitat of other species
- the running down of a critical part of the inheritance of future generations (Kibert, 1999:74).

As Hermann Daly argues:

> *unless one has in mind the preanalytic vision of the economy as a subsystem, the whole idea of sustainable development - of an economic subsystem being sustained by a larger ecosystem whose carrying capacity it must respect - makes no sense whatsoever.... It is the preanalytic vision of the economy as a box floating in infinite space that allows people to speak of "sustainable growth" (quantitative expansion) as opposed to "sustainable development" (qualitative improvement). The former term is self-contradictory to those who see the economy as a subsystem of a finite and non-growing ecosystem. The difference could not be more fundamental, more elementary, or more irreconcilable* (Kibert, 1999:82).

Valuing our environment for the export trade

Some work has been done on estimating the value for New Zealand's export trade of our 'clean green' image. The Ministry for the Environment commissioned a report (MFE, 2001c) to provide an estimate of the monetary value for New Zealand's export trade of our 'clean green' image. The aim was to quantify the extent to which particular New Zealand exports benefit from positive perceptions about our environment. The focus was on three sectors: dairy, inbound tourism, and organic produce. The report also assessed the potential consumer reaction to an illustrative example of a decline in New Zealand's environmental quality.

The main findings of the report included:

- New Zealand's clean green image does have a value. Environmental image is a substantial driver of the value New Zealand can derive for goods and services in the international market place.
- This image is worth at least hundreds of millions, possibly billions, of dollars - aggregating value elements from dairy, tourism and organic produce and extrapolating to other sectors such as meat.
- New Zealand is relatively clean and green. This is mainly attributable to our low population density resulting in relatively benign environmental pressures.
- There are environmental problems that are sufficient to raise questions about the sustainability of the value of New Zealand's exports attributable to its environmental image. There is a risk that New Zealand will lose value that is created by the current environmental image if we are not vigilant in dealing with the problems that could threaten the image.

Among its conclusions the report referred to the widespread use of New Zealand's clean green image in the marketing strategies of producers and in the export value of their products. The report pointed out that it is the environmental image that creates the value, not environmental quality *per se*. The risk is that as environmental quality declines it will be harder to maintain the image. It would become difficult to restore a positive image of New Zealand's environment held by overseas consumers if this image was totally shattered. This would have an enormous effect on the New Zealand economy considering that 64% of exports are edible and rely heavily on the clean green image.

3.2.2 Consumption and production

> *"Anyone who believes exponential growth can go on forever in a finite world is either a madman or an economist"* (Kenneth Boulding).

A UN publication in preparation for WSSD comments that:

> *no major changes have occurred since UNCED in the unsustainable patterns of consumption and production which are putting the natural life support system at peril. The value systems reflected in these patterns are among the main driving forces which determine the use of*

> *natural resources. Although the changes required for converting societies to sustainable consumption and production patterns are not easy to implement, the shift is imperative* (UNESC, 2002)

Underlying this issue is a perspective that increasing production and consumption is vital for economic growth which, in turn, is seen as essential for maintaining or improving the quality of life. But, as figures 3.1 and 3.2 show, as the economy grows so too does the consumption of energy and the amount of waste that is disposed of.

Measuring consumption and production

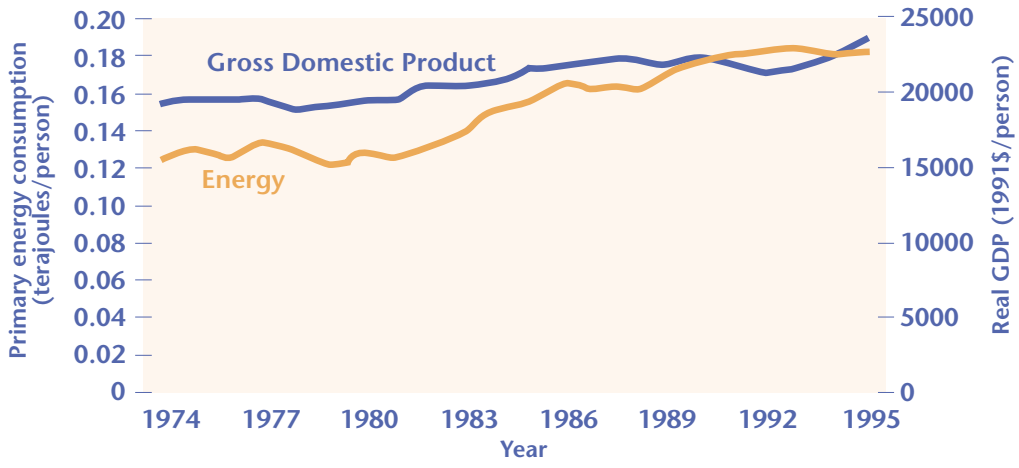
Measuring New Zealand-wide consumption and production trends is difficult because of the lack of a coordinated and reliable collection of relevant statistics (see chapter 4 for current initiatives aimed at addressing this issue). According to the most recent Ministry for the Environment's information on waste (MFE and LGNZ, 2002) every year in New Zealand:

- 3.4 million tonnes of waste ends up in landfills
- 500 billion litres of sewage are fed into 250 wastewater treatment plants, generating up to one million tonnes of sludge
- 13,000 tonnes of medical waste is incinerated
- about 93% of the materials we use are thrown away during production
- about 80% of what we produce is thrown away after one use
- the quantity of waste per person dumped every year in Auckland has increased by almost 75% since 1983.

These statistics are indicative of the behaviour of linear systems in action. Such systems operate on the 'take, make, waste' model. These are in contrast to cyclical systems that are designed from the beginning to minimise waste and maximise the value of resources through their re-use and recycling (see appendix 2 section A2.5 for more discussion).

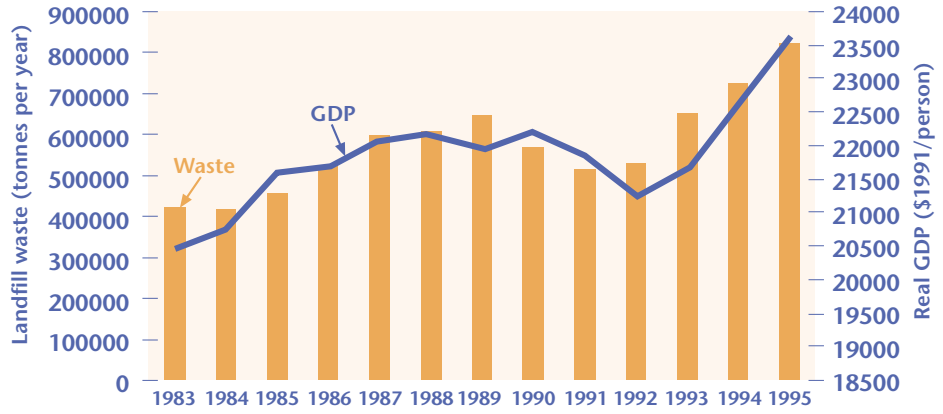
In 1996, New Zealand was around 87% self-sufficient in its primary energy needs. This fell to 72% in 2000. In 1996, the transport sector used 39% of total consumer energy, which increased to 41% in 2000. Between 1996 and 2000 the industrial sector component of total consumer energy decreased from 35% to 32.5% while the residential sector increased from 12% to 13% (Ministry of Economic Development, 2001a). Since 1998, energy intensity has largely remained steady (EECA, 2001)[5].

Figure 3.1: Energy Use and Economic Growth in New Zealand 1974-95



Source: Ministry for the Environment; Statistics New Zealand; Ministry of Commerce

Figure 3.2: Economic Growth and Waste Disposal at Auckland Landfills



Source: Ministry for the Environment

Developing more sustainable approaches

In New Zealand, as elsewhere, the traditional economic system is being challenged and a number of approaches have been developed that provide an operational focus for the general concept of sustainable consumption and production. New approaches include cleaner production, pollution prevention, the Christchurch Redesigning Resources initiative, The Natural Step and Zero Waste. Overseas work is being done on the de-coupling of economic growth from consumption patterns. Some governments have enacted packaging 'take-back' laws that require companies to recycle or reuse packaging discarded by consumers (Worldwatch Institute, 2002).

Redesigning Resources

The Redesigning Resources programme is based in Christchurch and was established to promote an applied understanding of Natural Capitalism (Hawken et al.,1999). Produced by influential business writers Paul Hawken and Amory and L. Hunter Lovins, Natural Capitalism is founded on four principles:

- **radical resource productivity**: redesigning processes to 'do more with less' so fewer resources are consumed
- **biomimicry**: learning from nature and developing more environmentally benign technologies and designs
- **a service and flow economy**: shifting from a product-based economy (where obsolescence is built into products to ensure continued sales) to a service and flow economy (where companies retain ownership of products and lease the services that those products provide)
- **investing in natural capital**: restoring and enhancing ecosystems that sustain life.

A Redesigning Resources conference was held in 2000 with 200 delegates from businesses, research organisations, community groups and representatives from government in attendance. Six 'pilot organisations' also offered themselves to be used as case studies. Christchurch City Council, Macpac, Manaaki Whenua Landcare Research, Orion, The Warehouse and the Shire of the Yarra Ranges (in Australia) have since been joined by Snowy Peak and the Recovered Materials Foundation.

The organisations involved in this project are attempting to redesign the way they use resources. Their progress towards the goals of Natural Capitalism has been monitored through quarterly updates distributed to delegates and other interested parties. They will also report back to a second conference in Christchurch in July 2002, highlighting any successes and impediments they may have faced. The pilot organisations are being supported by a management group responsible for facilitation and advocacy. This group is also establishing a network of global 'mentors' to provide further guidance in this area.

See http://www.redesigningresources.org

Economic instruments have been increasingly used in many countries and sectors to encourage more sustainable consumption and production patterns. Some European nations have begun to shift taxes from income to environmental 'bads' such as pollution and fossil fuel use (Worldwatch Institute, 2002). Some private investors have begun to leverage their wealth for sustainable development through participation in socially responsible investment portfolios. These programmes allow investors to avoid companies with poor social or environmental records (Worldwatch Institute, 2002). Commentators suggest that New Zealand appears to have used economic instruments in a very limited way though there are a growing number of tradeable permit systems, for example, fisheries and land development rights (see appendix 2 section A2.2.3 for a discussion of the fisheries management rights regime in New Zealand).

International Legislative Responses Promoting Reuse and Recycling of Materials

German Ordinance on Packaging Waste, 1993

Requires manufacturers to collect product packaging and arrange for its reuse or recycling, or to join DSD, an organisation that runs a package waste collection system in parallel with municipal waste collection. Consumers can also leave secondary packing behind in retail stores.

Japanese Packaging Recycling Law, 1997

Requires businesses to take back glass, plastic, paper, steel and aluminium cans, bottles, boxes and other packaging. Material that is not readily recyclable must be collected, sorted, transported and recycled at the manufacturers expense.

European End of Life Vehicles Directive, 2000

By 2006, car manufacturers must recover and reuse 85% of the weight of 'end-of-life' vehicles, and by 2015, 95%. Costs are to be borne largely by the manufacturer. In addition, the directive restricts the use of lead, mercury, cadmium, and hexavalent chromium.

Source: Worldwatch Institute, (2002:19).

Environmental taxes

During the round of interviews conducted as part of the background to this report, a number of people raised the subject of environmental taxes as a means of discouraging activities that give rise to adverse effects on the environment. Some referred to it as a method of taxing 'bads'. This means applying taxes to discourage pollution, waste and other activities that have negative impacts on the environment. However, some thought environmental taxes, while potentially useful, were still too crude an approach to be used in isolation.

A large number of environmental taxes and charges have been introduced in OECD countries with the explicit purpose of environmental protection. Examples are taxes on polluting emissions in the atmosphere and water, or on specific polluting products such as sulphur, carbon and pesticides (OECD, 2001c).

Speck and Ekins (2000) point out that the rationale for introducing environmental taxes is based on the existence of environmental externalities, that is, impacts on the environment which are side-effects of processes of production and consumption, and which do not enter into the calculations of those responsible for these processes. The negative effects of such externalities are costs to society. These external costs can be partially or wholly internalised by levying a tax or charge on the effects or on the products or processes that are responsible for them. The tax or charge acts as an incentive to the tax payer to reduce their tax liability by reducing the extent of the environmental damage, and the increased cost on the product encourages both the producer and consumer to switch to alternative products and processes that do not carry the tax liability.

New Zealand's tax revenues raised by 'environmentally related levies', as reported to the OECD[6], are not environmental taxes in the true sense of the term. They are listed as excise taxes on petroleum fuels, motor vehicle licence fees and road user charges. They have not been specifically

introduced for the purpose of environmental protection, although they may influence behaviour towards less consumption of fossil fuels. In contrast, Denmark has a wide range of environmental taxes, including specific taxes on liquid and solid waste, hazardous materials and water use that are intended to minimise impacts of products or processes on the environment. However, as pointed out in another OECD report (2000e), revenue earmarked for environmental purposes may be contrary to the 'polluter pays' principle. Whether or not a given polluter faces an increased burden as a result of a given environmentally related tax depends on whether earmarked expenditures benefit that polluter or not, and if they do, to what extent.

New Zealand's proportion of tax revenue collected from so-called 'environmentally related levies' is about half the average for the OECD. Most of the European Union (EU) member states are well above the OECD average. Energy taxes are the biggest revenue raisers among environmental taxes in the European Union (about 77% of total environmental tax revenue in 1997). Emission taxes and charges are less widespread. The most notable development in the EU is the increasing implementation of ecological tax reforms. Over half of the member countries have implemented such a revenue neutral tax shift (i.e. a shift in what is taxed and at what rate without increasing the overall amount of revenue collected), or will do so in the near future. All countries will use most of the additional generated revenue for reduction in taxes on labour, i.e. personal income tax and social security contributions (Speck and Ekins, 2000).

In their review of New Zealand's tax system, McLeod et al. (2001) addressed 'eco-taxation' and identified three conditions that in their opinion 'favour the use of taxes designed to reduce adverse environmental impacts to their optimal level':

- The impact of the adverse activity or use (however each unit is measured) should be *uniformly distributed*, and the impact of each unit should be the same.
- The adverse activity or use must be *measurable* to be able to apply the tax.
- The *marginal net damage of the activity must also be measurable* to be able to set the level of the tax.

On this basis the review could not identify any instances that would support any new eco-taxes at the national level to address environmental concerns facing New Zealand. However, the review did support the use of carefully designed eco-charges applied at the local level to deal with environmental concerns, most of which the review regarded as localised. The review gave its support to the consideration of a broad-based carbon tax, aligned to international carbon prices. The review also suggested that a carbon tax, combined with government emissions trading, offered the prospect of more efficient outcomes at lower costs of monitoring and compliance.

Taxing pollutant emissions or the use of natural resources is one way to internalise the costs that economic activities impose on the environment. But despite growing evidence of their effectiveness in modifying behaviour, their use has remained limited. Revenues from environment-related taxes in OECD countries still amount to less than 2% of GDP on average.

Reliance on environmentally related taxes has some drawbacks. These include:

- Increased costs due to environmental taxes do not guarantee corresponding changes to producer or consumer behaviour, especially in the short term. However, the OECD (2001e) points out that available evidence indicates that the responsiveness of demand to changes in the price of, for example, energy often is significantly higher in the long run, implying that a consistent long-term implementation of environmentally related taxes could reduce energy consumption and improve the environment.
- When the desired outcome of an environmental tax is achieved (or close to being achieved) there will be less expenditure on mitigation of environmental effects. When

this stage is reached a further reform of the tax system may be needed.

This reinforces the point that environmental taxes should not be considered in isolation. A package of policy instruments needs to be considered, including voluntary approaches, regulations and tradeable permits, to achieve ecologically sustainable outcomes.

While debate on the effectiveness of environmental taxes in New Zealand continues, evidence from the EU suggests that the use of such taxes is widespread and accepted as at least a partial substitute for taxing 'goods' such as labour. Contrary to the view of the 2001 Tax Review that most environmental issues that New Zealand faces are localised, there is a need to revisit the application of environmental taxes on issues that are of national significance, such as:

- the impacts of tourism on biosecurity and threats to biodiversity
- energy consumption (to encourage energy efficiency)
- non-renewable resource consumption (to avoid unsustainable 'quarrying')
- packaging (to minimise waste at source).

3.2.3 The media

Agenda 21 calls for countries to facilitate and encourage public awareness and participation by making information widely available (UNCED, 1992). However, participants in this investigation highlighted the lack of quality information for the public provided by the general media. New Zealand media seem to focus on conflict and sensationalism. This is echoed by overseas studies that have also found many environmental stories lack background and technical or scientific information (Beder, 1997; Smith, 1998; Voisey & Church, 2000). They are also often presented as 'self-contained isolated happenings' (Beder, 1997: 207) with a lack of coverage of associated systematic problems (Darley, 2000). This type of information is unlikely to encourage active citizenship and participation that a participatory democracy requires, as it relegates citizens to spectators and can promote apathy and cynicism (Beder, 1997). There is thus a tension for the media between giving the public what it wants and what it needs to become a well informed, active citizenry.

Certainly the media is a very powerful sector with the ability to not just report the news, but also to make the news (Beder, 1997). The environmental movement relies heavily on the media to convey its message to the general public, with well-planned advocacy campaigns being seen to contribute to the "cumulative public knowledge about environmental issues" (Smith, 1998: 7).

A difficulty for the New Zealand media in reporting on sustainable development is that there is no one organisation responsible for promoting the subject, and no one figurehead for the media to turn to for information or comment. The lack of integration between agencies involved in promoting sustainable development is mirrored in a lack of integration of news stories. While the media may cover stories about all three facets of sustainable development, often the links between them are not made.

Participants in this investigation highlighted the low status of environmental news in contrast to share trading and the economy that have daily slots in television and radio news programmes. Many current affairs programmes are sponsored by business. While this remains the case, sustainable development is likely to remain marginalised and misunderstood.

Advertising in New Zealand is a powerful driving force. The UN claimed in 1998 that our expenditure on advertising as a percentage of GDP was the highest in the developed world, equalling that of Britain and exceeding the United States and Australia.[7] Advertisements aim to persuade us to 'consume more stuff' with the subliminal message that consumption equals happiness and success. While our society is driven by an economic growth culture, consumerism will remain as "the mass participation in the values of

the mass-industrial market (Ewen, 2001: 187)"... "an aggressive device of corporate survival" (Ibid:54). To put it another way, the purpose of advertisements is to help us discover the things we didn't yet realise we needed, but the desires for which can be satisfied by the output of industry (Harrison, 2001). The values of our society and culture mould how our needs are translated into wants and "advertising and the media can stimulate new wants" (Raskin et al, 2002). Advertising appears to have promoted a consumption binge, which has influenced the high level of household debt in New Zealand compared to other developed countries in the OECD. In 2000, New Zealand households were, in aggregate, spending more than their income, while the average OECD saving rate was 8.4%.[8]

What the advertisements do not do is make the links between a consumer's choice of goods and the chain of effects the manufacture and disposal of that product has and will have on the environment and society. Consumers therefore need good quality, independent information to be well informed in their choices. This includes the ability to detect 'greenwashing' in advertising. While purchasing more environmentally friendly products may be preferable, green marketing can also be seen as a way of redirecting willingness to consume less to a willingness to buy green products (Beder, 1997). Green consumerism has been described as "... a palliative for the conscience of the consumer class, allowing us to continue business as usual while feeling like we are doing our part..." (Durining, 1992, cited in Beder, 1997: 180).

Many participants of this study suggested that sustainable development as a concept needs to be made more relevant to people in their own lives. The media could be a very effective partner for other agencies promoting sustainable development, by creating the desire in people to act in sustainable ways. One commentator[9] has suggested that marketing sustainable behaviours and making these behaviours habitual might be a faster way of achieving success than the traditional idea of educating for sustainable behaviours. This is because attitudes tend to follow behaviours. This idea suggests that achieving the desired end product justifies the means.

Turning the Tide - Leicester, England

This is a local initiative which began in Leicester in 1996 and expanded into a regional scheme in 1998. The project aims "to inform people about the environmental issues that directly affect them and encourage them to take simple, practical actions to improve their quality of life and the environment" (Environ website www.environ.org.uk/abouteniron/education/turningthetide.htm retrieved 15/2/02).

The project was developed after identifying four main barriers to the public in changing towards more environmentally friendly behaviour:

1. cost - (which can be a barrier or an incentive)
2. convenience - (more convenience means more people are likely to change their behaviour)
3. information - (appropriate information is necessary)
4. motivation/values - (individual attitudes and values determine to what degree convenience and cost will impact on their potential behaviour change).

Turning the Tide is a partnership of local authorities, regional media and organisations. The partnership runs a series of one-month campaigns which use the media to provide information about a variety of environmental issues (for example energy conservation, transport or recycling). The projects also encourage people to take some personal action regarding the campaign issue using offers and incentives. Past examples have included sales of low cost compost bins and token fares for using public transport.

These offers "have played a significant part in making an impact and encouraging people to take actions and make a difference" (Ibid, retrieved 15/2/02). Use of the brand "Turning the Tide" has been very effective in marketing the campaign and raising awareness about the topics the campaign has covered.

3.2.4 Education for sustainability

Many participants in this investigation, including students, academics and business people, highlighted the need for better education for sustainable development. Chapter 36 of Agenda 21 recognised that education is critical for achieving environmental awareness, values, skills and behaviours consistent with ensuring sustainable development.

The alternative NGO summit at Rio de Janeiro in 1992 produced a 'Treaty on environmental education for sustainable societies and global responsibility' (NGO summit, 1992:1). This treaty recognised that "individual and collective responsibility at local, national and planetary level" was needed to enable the social transformation and ecological preservation required for sustainable development.

Education for sustainability has grown out of the environmental education movement, which emerged from increased international concern about environmental issues in the 1970s. The Belgrade Charter and Tbilisi Declaration were products of intergovernmental conferences in the 1970s, that set out founding goals, objectives and principles for environmental education (UNESCO-UNEP, 1976, 1978). The Belgrade Charter called for a "new global ethic" for living on our planet, "which recognizes and sensitively responds to the complex and ever-changing relationships between humanity and nature and people" (UNESCO-UNEP, 1976:1). The term environmental education is still often used but might be seen to be just one aspect of the broader concept of sustainability education.

In more recent years education for sustainability has promoted the need for education to critically examine the dominant culture that has promoted current practices such as unsustainable economic growth and consumption patterns. Many commentators have highlighted the paradox of education being funded by government (central or local) institutions that are a part of the dominant culture. This implicitly educates citizens to conform to that culture. At the same time, sustainability education's goal is to educate the population to behave in a more sustainable way, a message that is often at odds with messages received from the media and institutions themselves.

Sterling (1996:18) puts it very neatly: "Education is proclaimed at high level as the key to a more sustainable society and yet it daily plays a part in reproducing an unsustainable society". This is not a new idea, as Einstein noted when he said, "No problem can be solved from the same consciousness that created it." (Quoted in Sterling, 2001).

A fundamental premise of education for sustainability is the need to understand the ecological limits operating on our planet and the fact that human beings need to function within them. As natural resource users, we need an appreciation of the importance of maintaining the natural capital of the earth and an understanding of how all our actions impact in some way on the environment.

The need for an ecologically informed citizenry that can participate in democratic governance is therefore a high priority for education for sustainability. Socially critical education, described by Huckle (1993) as emancipatory, is what is needed to help create a new sustainable development paradigm.

Progress in implementing education for sustainability has been slow, however. New Zealand is not alone in this regard, although some countries have achieved more with education than others. An OECD report suggests that those countries with the most advanced environmental education policies are those where the environment is perceived by the citizens as most threatened (OECD, 1995). New Zealand's education system could therefore be a victim of the pervasive perception of our country as 'clean and green'.

New Zealand's environmental education strategy

Agenda 21 urged national governments to "strive to update or prepare strategies aimed at integrating environment and development as a cross-cutting issue into education at all levels within the next three years" (UNCED, 1992: 36.5). New Zealand's environmental education strategy, 'Learning to care for our environment', was published six years after the Rio Earth Summit (MFE, 1998).

The strategy outlines five objectives of environmental education adapted from the 1977 Tbilisi Declaration:

- **Awareness** to help people to understand the impacts of our activities on the environment and our responsibilities
- **Participation** to provide people with the capacity to be actively involved at all levels in helping resolve environmental problems
- **Attitudes and values** to help people acquire values of concern and responsibility for the environment and be motivated to care for the environment
- **Knowledge** to help people gain experience in and a basic understanding of the environment and human interaction within it
- **Skills** to help people acquire the skills to participate effectively in decision making that affects the environment and to play a part in identifying and solving environmental problems.

The Ministry for the Environment is the lead agency for five out of the six priority areas outlined in the strategy. This is because environmental education is seen as a life-long process which extends far beyond formal institutional education. However, while environmental education comes under the cloak of the Ministry for the Environment, other agencies also play a significant part in its implementation, notably the Ministry of Education but also the Department of Conservation, Ministry of Fisheries and local government.

As recently as 1998 a Government strategy was still using the term 'environmental education'. Education for sustainable development needs to have the direct support of a much wider range of Government agencies than just those concerned with natural resources. Traditionally in New Zealand there have not been good links between environment and education agencies and this is echoed overseas (OECD, 1995).

The national environmental education strategy (MFE, 1998) "strongly suggested" that a more coordinated approach was needed to enhance and support the initiatives already being undertaken in the environmental education field and to provide a clear set of priorities for action. One initiative that stemmed from this strategy was the development of a directory of environmental education resources and associated website.[10]

One participant in this investigation said that sustainability education initiatives in New Zealand are still fragmented and lacking strategic direction. One suggestion is to adapt a model from the city of Curitiba in Brazil where a central advisory group, funded from a variety of sources, has the task of coordinating and delivering sustainability education resources.

Implementing education for sustainability

Some proponents of sustainability education believe that teaching children is essential, so that sustainable development is something that becomes as natural to them as reading and writing. Some educators feel that to be effective this teaching must be done before the age of sixteen (OECD, 1995).

The national guidelines for implementing environmental education in the New Zealand school curriculum were published in 1999 (Ministry of Education, 1999). This document provides steps for planning environmental education programmes, within the national curriculum statements. Implementation of environmental education in New Zealand schools is voluntary, with the onus being on boards of

trustees to decide how it will be implemented in individual schools. It is therefore often left up to enthusiastic individuals, a situation that also occurs overseas (OECD, 1995, 2001a).

A recent national initiative is the 'Enviroschools Programme' which has grown out of a project started in Hamilton in 1993, a partnership between Hamilton City Council, the Community Environmental Programme and Hamilton schools. The programme aims to integrate environmental education into school life. Schools develop their own plans based on local and regional issues. These include developing an environmental vision, supporting staff development, creating a strategic plan for the whole school. Students are included in environmental project planning and implementation and document their experiences.

There has been strong interest nationwide in the programme, with approximately 30 schools in the central and upper North Island implementing it. Links are being strengthened between the programme and other agencies providing environmental education programmes, including government Ministries and local bodies. However, there is a need for an advisory group to be established for the project, along with a national environmental education advisory group that would consist of representatives of key agencies and Ministries (Heidi Mardon, EnviroSchools Update April 2002, pers. comm., 8/4/02).

However, formal schooling is only one aspect of education for sustainability. If we left sustainability education only for those children at school, progress towards sustainable development would likely continue to be slow until today's students are in the position to be agents of change. A multi-faceted approach is therefore needed to target all ages and sectors. Informal and formal, lifelong education is crucial for improving public and corporate understanding of sustainability issues (OECD, 2001a).

Local authorities have taken a lead role in implementing sustainability education in New Zealand, driven partly by increased public awareness of environmental issues and requirements under the Resource Management Act 1991. Environment Bay of Plenty, for example, states that environmental education is the "principle non regulatory means by which Environment BOP implements its policies to achieve its environmental objectives".[11]

A survey of the websites of all eleven regional councils showed that nine of those councils have a section on environmental education on their sites. While the majority focus on school education, Environment Waikato also covers industry and business, farmers, landcare and beach groups.[12] One of this study's participants believed that Environment Waikato's strong education programme has had definite impact on community awareness and behaviour change in the region.

Waitakere City also has a broad education focus. Their website has sections for adult education, schools, waste minimisation and cleaner production, and a variety of 'how to' guides for the community covering such topics as water and wastewater, erosion control and streamside planting.[13] Auckland Regional Council has recently initiated a community education programme for households.

The business community is also a key player as both a recipient and provider of education for sustainability. The Massey University (2001) corporate environmental responsiveness survey suggests that while the 'heavy industry' business sectors have an understanding of their impact on the environment, others such as the insurance industry show less awareness that sustainable development applies to them. This study also identified the need for sustainable development education for all staff and management to empower employees and contribute environmental (and sustainability) values into the organisation's culture.

3.3 Trends

As we look toward the future, environmental issues are likely to continue to become increasingly complex. The long-term nature of many environmental problems will become more apparent, as evidence grows of the accumulation of pollutants in ecosystems and of the gradual degradation of renewable resource stocks and qualities. The role of these ecosystems in underpinning economic and social activity will become clearer as will the need to examine the impacts of economic activities on ecosystems. Environmental 'science' will therefore take on a greater importance. On the other hand, the ability of science to deliver credible solutions to these problems is also likely to be called into question more often, and debates about the need for 'precaution' in dealing with environmental matters will probably intensify.

We can also anticipate that decisions concerning environmental policy will increasingly have to be integrated with social and economic policy decisions in a sustainable development context. Two key messages will in particular need to be delivered to economic and social policy makers. The first is the idea that the environment is a vital base upon which all economic and social activity ultimately depends. If this base is jeopardised, then these 'derivative activities' will also be jeopardised. Second, it is no longer possible to completely separate economic and social policies from environmental needs, as if 'someone else' were looking after the environment. In order to achieve full 'policy integration', policy makers in the economic and social spheres will have to accept more environmental responsibilities (and vice versa). (OECD, 2001a:29).

This section discusses both trends in the environment affecting the implementation of sustainable development and trends in the implementation of sustainable development itself. Some of these trends are global and some are more New Zealand specific. These are trends that are going to challenge New Zealand's future environmental sustainability and include globalisation, building sustainable cities, managing the links between human and ecological health, managing freshwater resources and coping with climate change. A general difficulty with assessing trends in New Zealand is the lack of indicators and accumulated data over a meaningful timeframe with which to establish trends. This is particularly so in environmental management and outcomes, affecting the implementation of sustainable development. It is not necessarily that the data does not exist, but that it has not been compiled in a readily accessible form or one which measures, in an integrated way, progress towards sustainability.

3.3.1 Globalisation

Globalisation can be defined as "a process in which economic markets, technologies, and communications gradually come to exhibit more 'global' characteristics and less 'national' or 'local' ones" (OECD, 2001a:47). Liberalisation of international trade regimes, financial market deregulation, intensified competition, as well as rapid technological changes, particularly in information, communication and transportation technologies, are the main drivers of this process (OECD, 2001a). New Zealand is amongst the Top 20 global nations according to the A T Kearney/ Foreign Policy magazine Globalisation Index (A T Kearney Inc and Foreign Policy, 2002).

Contemporary globalisation is typified by the diminishing costs of trading products, investing capital, and employing production inputs, whether sourced in local or international markets. Huge declines in transport and communications costs, convergence towards common global institutional forms, and the knowledge economy with its new organisational forms and infrastructures all help create globalisation (Statistics New Zealand, 2000a). However, as Nobel laureate and former World Bank Chief economist Joseph Stiglitz recently observed, "a borderless world through which goods and services flow is

The Global Responsibility Investment Fund

Tower Managed Funds is promoting a scheme to encourage investment in more socially and environmentally responsible companies. The Global Responsibility Investment Fund has been developed as a response to increasing demands from people who want their investments decisions to reflect their personal values and concerns.

The Fund invests in publicly listed companies around the world that are selected according to environmental, social and financial criteria. In the environmental area, the emphasis is placed on eco-efficiency indicators to determine a company's performance. These indicators are linked to savings in the areas of climate change emissions, ozone depletion, materials usage, toxic releases and energy and water usage. Companies are also assessed according to the quality of their environmental management systems and the nature and impacts of the products they produce.

In the social sphere, an analysis is undertaken to establish a company's performance against a set of human rights criteria. These include a consideration of an organisation's labour relations policies, the procedures and systems they have in place, and monitoring and reporting initiatives.

Based on these analyses, businesses can only be selected for the fund if they rate in the top 30% of companies and if they are expected to perform well financially. Businesses that are selected are also expected to produce strong returns, based on assumptions that:

- Companies that use resources most efficiently tend to have better returns.
- Companies that have undertaken measures to reduce their environmental risks have lower financial risks.
- Companies that perform well against human rights criteria tend to have lower costs and face a lower risk of damage to their reputations.

The international insurance group managing the fund, Storebrand Kapitalförvaltning, believes that companies will be placed under increasing pressures in the future to minimise their adverse social environmental and impacts. As such, those businesses that can demonstrate better performance in these areas are also likely to become more attractive to investors as they produce higher returns.

See http://www.towerfunds.co.nz

also a borderless world through which other things can flow that are less positive" (A T Kearney Inc and Foreign Policy, 2002). The World has seen that recently through the September 11 attack on the World Trade Towers. New Zealand has seen it through the arrival of a variety of plant and insect pests such as mosquitoes potentially carrying the Ross River virus and other diseases. Globalisation involves a dense web of cross-border relationships ranging from the very obvious (the spread of disease) to the very subtle (the spread of ideas).

An outcome of globalisation can be the undercutting of national policies required to address domestic social (for example, equity or unemployment) and environmental issues (Kibert, 1999). Existing international trade exerts influence on national and local community decision making. That influence has the potential to override local sustainable development initiatives. For example, New Zealand may be forced to accept international environmental standards that are lower than domestic environmental standards.

As global issues in trade, resource management and security require governments to take an international perspective, government has more global commonalities, with treaties and alliances, and trends towards national identity being subsumed in larger regional economic identities. Global organisations operate in far wider financial, capital and labour markets with consequences such as looser structures and more product and activity flexibility. While import penetration has risen, consequences of globalisation are not uniformly positive. They can bring to individual regions less local integration, collaboration and employment, as well as less local absorption of change (Statistics New Zealand, 2000a).

3.3.2 Sustainable urban communities

A key challenge for the 21st century will be seeking ways in which we can make our cities and urban areas more sustainable. The majority of New Zealanders live in cities. Cities are major centres of production, consumption, energy and water use and waste production. Sustainable urban

Earthsong Eco-Neighbourhood

The Earthsong Eco-Neighbourhood is an urban housing development being constructed in Waitakere City. It is being managed by a group of current and prospective residents in the estate who have formed a non-profit trust.

The development is being modelled on the principles of permaculture and cohousing. The main aim of permaculture is to create living systems without producing waste. Cohousing is a form of cooperative housing that aims to combine the autonomy of private dwellings with the advantages of community living. Combining these elements, the vision of the project is to create a model of socially and environmentally sustainable urban living.

The development incorporates 'green' architecture principles with buildings oriented towards the sun and designed to maximise energy efficiency. Environmental considerations determine the selection of building materials and components according to their energy content, toxicity, durability and capacity to be recycled. Rainwater is collected for household and garden use and on-site stormwater and wastewater treatment facilities are being developed. Renewable energy technologies such as solar water heaters are also being used.

The physical design of the development aims to encourage a strong sense of community that is balanced with the needs of individuals. For example, a variety of different dwellings are clustered around common paths and courtyards and cars are confined to the edge of the site. A common house provides many shared amenities.

It is envisaged that residents will be able to achieve considerable cost savings while living in the neighbourhood. In part, this can be attributed to the energy and waste efficiency initiatives. In addition, co-ownership of some facilities and tools is being encouraged to reduce consumption costs. Spaces are set aside for growing food. Meanwhile, the project is situated in a central location to support participation in an urban workforce.

A key aspect of the development is the use of consensus-seeking decision making among prospective residents. Early progress was marred by a high turnover of people involved in the project and disputes over the processes required for reaching consensus. Nonetheless, the development of new processes, combined with the commitment of many individuals, ensured that the first tenants were able to move into their homes in January 2002.
See http://www.ecohousing.pl.net/

development involves improving the efficiency of resource use, reducing waste and addressing environmental, economic and social issues in an integrated way (PCE, 1998a).

Despite the highly urbanised nature of our society, as previous PCE reports show, there has been little guidance, research and information assistance for local government from central government on these issues. One significant shortcoming is the absence of an institution with a focus on carrying out research into urban environmental issues (refer appendix 2 section A2.2.9 and A2.5.1). One consequence of central government restructuring has been a loss of national data sets for processing information about people and their environments in urban areas. Consequently, data sets tend to be incomplete, inconsistent and short-run which means that information on the urban environment is fragmented and partial (PCE, 1998a). There is no national agency that can undertake research and provide information on urban sustainability issues to local government.

There is no output class for urban research in the Public Good Science Fund and no urban research funding strategy. However, a FRST review of funding for sustainability currently underway includes 'Sustainable Cities and Settlements' as a component (see section 4.1.6).

Key issues for urban sustainability that need to be addressed are:

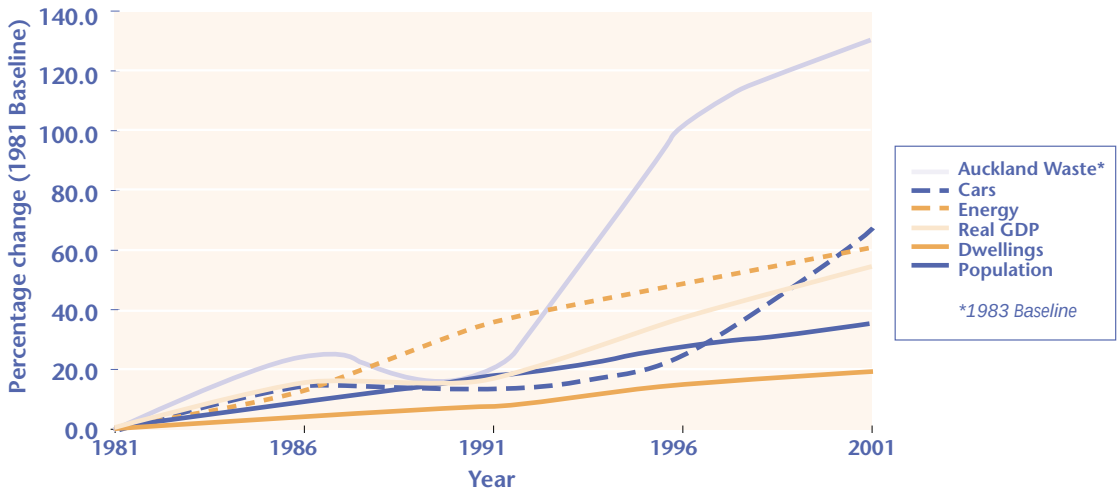
- sustainable urban development based on Agenda 21 principles
- urban growth and development
- transport management
- urban air quality
- climate change
- liveability
- reducing resource inputs
- reducing waste outputs (PCE, 1998a).

New Zealanders have made few gains in terms of resource use efficiencies or reducing their impacts on the urban environment (see table 3.1).

Table 3.1: National Parameters

National Parameters	Percentage Change from 1980 to 1996 (PCE, 1998a)	Percentage Change from 1981 to 2001
GDP	37% increase	54.7% increase[14]
Total consumer energy use	44% increase	60.8% increase[15]
Area of urban land	78% increase	– [16]
Number of dwellings	28% increase	35.2% increase
Number of cars	31% increase	66.9% increase
Solid waste disposal (Auckland Region only)	95% increase	130.5% increase[17]
Population	15.5% increase	18.9% increase

Figure 3.3 Percentage Change in National Parameters 1981 - 2001



Source: Environment Waikato (2002)

The parameters, first noted in 1998, have been updated for the purposes of this investigation and show the trends continue to move towards increasing unsustainability (see also figure 3.3).[18]

Decoupling quality of life from increasing resource consumption and waste production is a significant challenge for New Zealand. Critical to future urban sustainability will be greatly enhancing the role of community and participatory democracy.

3.3.3 Human health and the environment

The links between development, environment and health received a significant amount of attention in Agenda 21. The impacts of environmental risk factors on health are extremely varied and complex in both severity and clinical significance. The impacts on human health from degradation of the environment affect society not only in terms of loss of quality of life, but also in terms of expenditure on health care, loss of productivity and loss of income (OECD, 2001a). Many of the key determinants of health and disease - as well as the solutions - lie outside the direct control of the health sector, in sectors concerned with environment, water and sanitation, agriculture, employment, urban and rural livelihoods, trade,

tourism, energy and housing. Nevertheless, the health sector has an important role as advocate and guide for healthy environments and lifestyles. Addressing the underlying determinants of health is key to ensuring sustained health improvements (UNESC, 2002).

Health Effects of Motor Vehicle Pollution

A recent preliminary study to quantify health effects due to air pollution from motor vehicles in New Zealand (Fisher et al., 2002) provided a 'best estimate' of those effects based on available information. The study found that the most likely estimate of the number of people above 30 years of age who experience pre-mature mortality in New Zealand due to exposure to emissions of PM10 particulates[19] from vehicles is 399 per year. This compares with 970 people above age 30 experiencing pre-mature mortality due to particulate pollution from all sources (including burning for home heating), and with 502 people dying from road accidents (all ages). Most of the increased mortality due to vehicle emissions (253 people, or 64% of the total) occurs in the greater Auckland region.

The results of this study were found to be consistent with other studies, which show that mortality due to vehicle related air pollution is of the order of twice the accident road toll.

The Burden of Asthma in New Zealand

A study carried out for the Asthma and Respiratory Foundation of New Zealand (Holt and Beasley, 2001) identified asthma as a major public health problem in New Zealand, with about 15% to 20% of children and adults having asthma. These prevalence rates are among the highest in the world, particularly in Maori and Pacific Island adults. The economic costs of asthma have been estimated to be around $825 million per year in the late 1990s. Of concern is the incomplete understanding of the underlying causative factors that are responsible for the trend of increasing prevalence in New Zealand and other countries.

In a separate (ten year) study for the California Environmental Protection Agency's Air Resources Board,[20] researchers produced the strongest evidence to date that ozone, commonly referred to as 'smog',[21] can cause asthma in children. Previous evidence has shown that ozone can aggravate existing cases of asthma, but the new study pointed strongly to ozone as a cause in the development of asthma in young people who did not previously have the disease.

In a New Zealand context, good health is recognised as a critical component of well-being. Improved health, both mental and physical, is an important aspect of reducing social exclusion. Poor health can restrict people's ability to take part fully in society, including their ability to work, to engage in and succeed at education, and to enjoy leisure and recreation activities (Ministry of Social Policy, 2001).

Urbanisation can lead to health problems from poor living conditions and inadequate access to basic necessities of life. There is no doubting the health benefits of environmental factors associated with good air quality; safe, secure and quality housing; safe drinking water; access to open space; and safe management of chemicals and hazardous substances (PCE, 1998a). Pollution and environmental degradation are directly connectable with ill health that would otherwise be preventable (Worldwatch Institute, 2002). Climate change is extending the range of mosquitos spreading malaria and other vector-borne diseases. Warmer temperatures increase the incidence of algal blooms affecting bathing water quality and marine life.

Corvalan et al. (1999) refer to two types of environmental health threats:

- *Traditional hazards* related to poverty and insufficient development (e.g. lack of access to safe drinking water and inadequate basic sanitation in the household or the community giving rise to disease).
- *Modern hazards* related to rapid development that lacks health and environmental safeguards and to unsustainable consumption of natural resources, the health effects of which may not manifest themselves until some years later.

Waitakere City eco-hospital

Waitakere City Council is working with Waitemata Health on the development of an 'eco-hospital' in their area. Environmental principles are being incorporated into the design, construction and operation of the new hospital.

The initial designs for the buildings were developed according to the assumption that it is easier and cheaper to plan for environmental factors from the outset, rather than retrofitting later on. Windows are being positioned to catch the light and heat from the sun, while the walls, floors and ceilings are being insulation to reduce energy consumption. Gardens, plants and rocks act as natural filters to direct and control stormwater.

Natural materials are being selected to reduce the presence of toxic fumes and timber has been chosen from sustainable plantation sources. To reduce stormwater problems, the tar sealing of car parks is also being limited. Meanwhile, the Council is working with community groups to replant the grounds with native vegetation to provide a habitat for local species.

After construction is complete, a variety of additional design features will be fitted to reduce water and energy consumption. Rain water will be harvested to be used in toilets and for irrigation and, where there is no health risk, grey water (i.e. that has already been used for purposes such as showering) will be collected and redistributed. Local art works are also being commissioned to make the hospital environment less 'sterile' and gardens and courtyards are being developed to provide patients and visitors with easy access to fresh air and sunshine.

Over time, it is anticipated that the new buildings will achieve significant cost savings on power, water and wastewater. Nonetheless, one of the biggest challenges that the advocates of the hospital have faced is convincing people that these benefits will require a reasonably large investment up-front. Although it has been difficult to work around budgetary constraints, the new hospital is scheduled to open in 2004.

See http://www.waitakere.govt.nz/AbtCit/ec/ecoinit/hospital.asp

3.3.4 Land Use and Systems Changes

Given that our comparative advantage as a trading nation continues to be strongly influenced by farm-based products (see section 3.1.1), trends and changes in land use and production systems are fundamental to the sustainable development of New Zealand.

Current land use in New Zealand is shown in figure 3.4. Agricultural land use is further broken down in table 3.2. The Government reforms of the 1980s and 1990s, coupled with world commodity trading trends, have resulted in some marked changes in pastoral land uses - the most notable being the decline in sheep numbers from 70 million in June 1982 to 45.2 million by June 1999. By contrast, beef cattle numbers have fluctuated modestly in the past twenty years totalling 4.6 million in June 1999. Dairy livestock have increased to an estimated 4.5 million in 2000 (from 3 million in 1982) and the numbers are still rising.

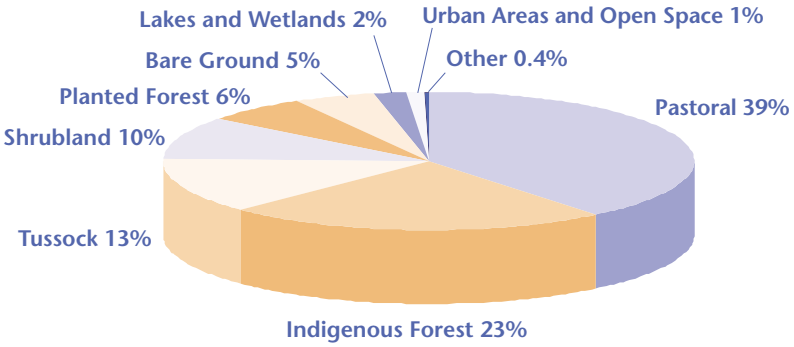
The major trend in agricultural land use is towards intensification and specialisation, with the notable exception of the reversion of marginal hill grazing lands to native vegetation regrowth. The agricultural growth sectors are dairying, deer, horticulture (including viticulture), vegetables, and organic systems. The trend is to higher material input systems (with the exception of organics).

Dairy farming

While more land is being converted to dairying, particularly in Southland and Canterbury, often involving large scale irrigation, there is also a nationwide increase in intensity; i.e. cows per hectare (see table 3.3). The most intractable problem for dairying in New Zealand is the difficulty in managing non-point pollution, a product of stocking rates, soil types and increased fertiliser inputs. The key impacts from live stock intensification on the environment and hence for sustainability are:

- decreased water quality through contamination by nutrient leaching and biological contamination
- loss of wetlands and fisheries
- erosion and sedimentation loadings in streams and rivers.

Figure 3.4 Land Cover as at 1996/97.



Source: Land Cover Database 1. Chart compiled by Policy Information Group, Ministry of Agriculture and Forestry. "Other" includes all land cover classes, which are not shown separately in the chart. A further breakdown of pastoral land cover shows dairy cattle farming comprises 7.6% and horticultural land use comprises 0.2%.

Table 3.2: Area of Farm Land

	1990	2000	2010	% change 2000-2010
Viticulture	5,800	13,300	24,000	+81%
Deer	79,000	170,000	320,000	+88%
Dairying	1,050,800	1,640,400	1,906,000	+16%
Forestry	1,305,000	1,747,100	1,997,100	+14%
Horticulture	82,400	102,800	110,900	+8%
Other pastoral	12,285,200	10,563,800	9,901,000	-6%
Arable	316,000	208,500	186,800	-10%

Source: MAF (2002a)

Table 3.3: Growth in Dairy Industry 1990-2000

	1990	2000	Change
Area (x1000 ha)	980	1290	+31%
Cow numbers (x1000)	2310	3270	+41%
Cows per hectare	2.4	2.7	+13%
Milk solids (x10^6 kg)	550	970	+77%

Source: Livestock Improvement Corporation (1989/90; 1999/2000)

Recent research on E. coli levels and distribution in the Waikato region shows that the pattern of contamination is dominated by non-point discharges. The highest median E. coli concentrations are associated with the most intensive dairy farming in the centre of the region (Collins et al., 2002). Conversely the lowest median E. coli concentrations are found in forested catchments indicating there is some (but minor) contamination by wild animals (Collins et al., 2002).

Two key factors correlate closely with increased E. coli contamination:

- the percentage of poorly drained soils within a catchment
- the density of dairy cows.

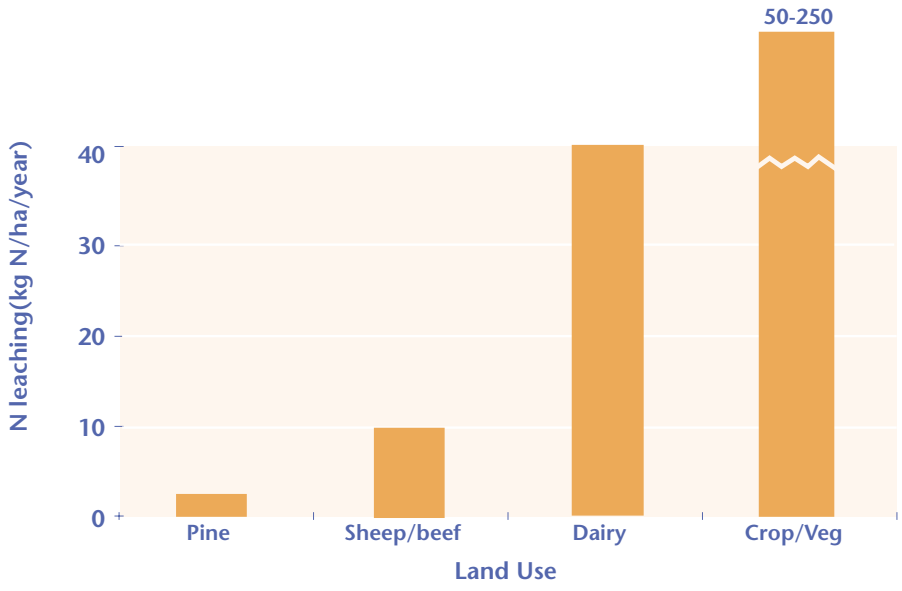
A third factor, the median turbidity at the catchment outlet, is a good surrogate for the E. coli contamination (Collins et al., 2002).

Current contamination levels of surface and groundwater in major dairying areas are resulting in increasingly severe degradation of rivers in these areas. This is of increasing concern to New Zealand communities. It is also recognised as a potential risk to the positioning of New Zealand dairy products in international markets as livestock densities decline in some key markets and the environmental management expectations of consumers rise (Rae and Strutt, 2001). Key mitigation measures are likely to include fencing riparian areas and protection and enhancement of wetlands. Research indicates that wetlands may work to attenuate faecal contamination (Collins et al., 2002).

Nutrient losses

Intensification is leading to increased use of nutrients, particularly nitrogenous fertilisers, with consequential losses from the pasture systems. These losses are highest from intensive cropping but dairy losses are also high. They are much more significant for sustainability overall because of the extensive and increasing area devoted to dairy farming (see figure 3.4).[22] Nitrogen inputs into dairy farms now average about 80kg/ha/year nationally (but often exceed 200kg/ha/yr), up from about 30kg/ha/year in 1990. As a result, it takes about three units of energy input to produce a calorie of milk protein energy output (Wells, 1998). The long-term sustainability of this is questionable given the dependence it places on petroleum products.

Figure 3.5 Loss of Nitrogen from Rural Land Uses



Source: Environment Waikato (2001)

Other land uses and impacts

Other land uses that have increased significantly in recent years are planted production forests and urban areas (see section 3.3.2 for a discussion on urban areas). New Zealand currently has 1.8 million hectares of planted production forests. Those forests are dominated by one species Pinus radiata (90%). Over 60% of them are young forests, 15 years or less. Major forest growing areas are the central North Island, Northland, East

Coast, Hawkes Bay, Nelson and Marlborough, Otago and Southland. The planted forest area is expanding. The average annual area of new planting for 1995 to 1999 was 62,000 hectares. Harvest volumes will increase significantly in the future from 18.0 million m^3 to a forecasted 34.6 million m^3 in 2020 and 52.5 million m^3 in 2040 (MAF, 2002b).

Other impacts from land use, which will influence the long-term ecological sustainability of New Zealand, include erosion, loss of carbon and organic matter, compaction and loss of soil structure, acidification and chemical contamination. Currently 68% of land in New Zealand is considered susceptible to erosion (MFE, 1997).

The most significant impact for arable soils is loss of carbon and acidification. The biggest carbon losses have been recorded in South Auckland market gardens and Waikato croplands (MFE, 1997:8.57). Pastoral systems have less impact on the carbon balance because of return via animal faeces. Acidification of soils is a product of increased N levels and nitrate production. Current levels of lime application are only 50% of that needed to counteract acidification. The result is a reduction in the survival of clovers and thus the sustainability of most New Zealand pastoral systems.

Chemical contamination of lands has increasingly become an issue as the long-term consequences of some agrochemicals (particularly organochlorine pesticides) have become apparent. The extent of some contaminants such as DDT is well known and strategies to mitigate its affects well developed. However, for others, such as those associated with the treatment of sheep for lice, the extent of contamination is not yet known. Initiatives are currently underway to better quantify such sites and establish their environmental risks.

The key trend towards intensification of agricultural land use clearly poses a significant challenge for sustainable development in New Zealand. It is becoming increasingly clear that the range of environmental impacts arising from it are compromising the quality of our environment and threatening our clean, green image overseas.

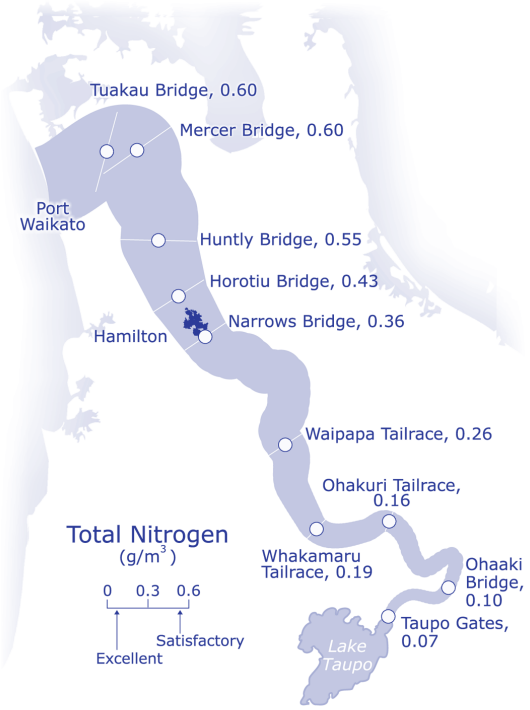
The Waikato River Water Quality Story

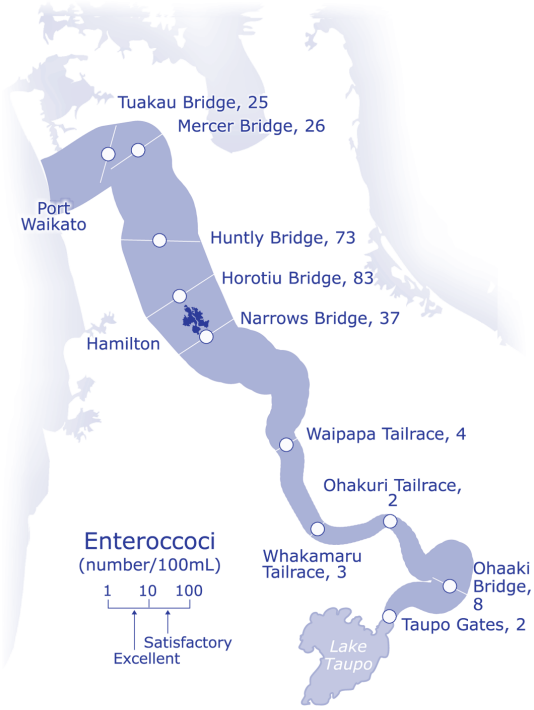
The Waikato River is the Waikato region's longest and most significant river. It stretches 425 km from its source in the Tongariro National Park to Port Waikato on the west coast of the North Island. As with many rivers its size it is a resource with multiple uses, subject to many pressures, and valued in many ways.

The Waikato River is a tupuna (ancestor), a taonga and a life force of Tainui Waka and Ngati Tuwharetoa. The river is deeply embedded in the tribal consciousness through generations of living close to the river. For local tribes it provided for spiritual and material needs - sustenance, a source of cleansing and healing, and a network for trade, travel and communication. The tribes of the Waikato River have long been aware that their tupuna is ill, with a reduction in water quality and food stocks, diseased shellfish and illness among the people. Over the years a disregard for the life giving capacity of the river has meant that its kaha (strength) has diminished.

The clearance of land for agriculture, forestry, industrial development and urbanisation near the river in the mid 19th to mid 20th century means that the pristine quality of water near its source diminishes progressively along the length of the river. In the 1950s, water quality was found to be very poor, with 'indicator' bacteria measured to be 20-170 times higher than a 'desirable limit for swimming'. Inadequate treatment of many sewage and industrial wastewaters discharged into the river was identified as the main cause.

Current monitoring by Environment Waikato shows that water quality has improved substantially since the 1950s. The main improvements have come from better treatment of effluent from urban and industrial processes. Despite these improvements water quality continues to diminish progressively downstream. Major 'point sources' are estimated to contribute up to 10% and 15% of the total load of bacteria





Source: Environment Waikato (2002)

and nitrogen, respectively, in the lower Waikato River (Vant et al., 2000). The remainder is derived from 'non point sources' such as leaching and runoff from agricultural and urban areas.

The following diagrams illustrate the levels of nitrogen and bacteria in the Waikato River. They are based on data collected by Environment Waikato between 1996-2000. The worm-like bands follow the course of the river and their width represents the levels of contaminants. Thus, the wider each worm is, the poorer the water quality.

Ideally, total nitrogen levels in water should be less than 0.5 grams per cubic meter and high levels in water can be a result of both wastewater and agricultural runoff. Environment Waikato considers that rivers and streams with total nitrogen levels above 0.5 grams per cubic meter are nutrient-enriched. This excess of nutrients promotes algal blooms and the growth of nuisance plants that can choke waterways and out-compete native species. Similarly, water quality levels of enterococci bacteria (an indicator of health risk) in the lower river have often been recorded at levels that are not good enough for swimming.

The challenge ahead is to continue to improve water quality in the Waikato River by managing 'non point sources' of contamination. Farming is probably the main non-point source of contaminants to the river. Around 75% of the non-point source nitrogen is estimated to come from pasture - mostly from cow urine which leaches into ground water and eventually flows into the river. The dairy cattle in the Waikato region excrete about 90 times more nitrogen each year than does the human population.

Scientists estimate that the waste generated by the 3,000 dairy herds in the Waikato River catchment is equal to the waste from about five million people or nearly 50 cities the size of Hamilton. Increasing herd sizes are likely to result in higher amounts of nutrients and bacteria entering waterways through runoff and leaching. Environment Waikato has recently undertaken initiatives to manage non point farming sources, such as encouraging fencing and planting in riparian areas and working with industry to improve on-farm nutrient management.

Source: Environment Waikato (1998)

3.3.5 Freshwater Resources

Freshwater resources are essential for human health, economic productivity, and social development. Freshwater is a recyclable but finite resource: with careful use and treatment, it can be managed in a sustainable manner. It is currently abundant on a global scale, but scarce in a number of countries or regions. While the water resources of the Earth are constantly recycled by the hydrological cycle,

> *available freshwater resources for human or environmental use are declining as many water bodies become contaminated with pollutants. As a result, local and regional incidences of water scarcity are likely to increase over the coming decades* (OECD, 2001a:97).
>
> *The only globally competitive advantage New Zealand has is freshwater* (Sir Tipene O'Regan, interview November 2001).

In New Zealand we think of ourselves as being water-rich. On a national scale we are water-rich, with some areas of very high rainfall and extensive groundwater reserves. But often water is not super-abundant in our urban areas; shifts in rainfall patterns indicate greater variability of supply in the future, alongside trends in rising demands per capita. The outlook is for rising stresses on our supply and delivery systems, and pressures on treatment capacity (PCE, 2001a).

A PCE investigation into the management of urban water systems (PCE, 2001a) indicates that there are a number of key challenges common to all towns and cities. They include environmental, social and economic dimensions but many of the underlying causes are interrelated and overlapping. One of the biggest challenges will be reaching consensus between the various stakeholders on the environmental, social and economic goals and values of urban water systems. Without much more extensive community and cultural input, and greater understanding of water management options, improving the sustainability of current systems will be very difficult and painfully slow.

Other major challenges include:

- inadequate water flows from excessive and inefficient water use
- contamination of surface waters and groundwater from uncontrolled or poorly managed stormwater drainage and wastewater disposal
- the increasing expectations of consumers and ratepayers about the provision and quality of water services. However, there is often a negative reaction to large rate increases or increased charges to fund required infrastructure
- a lack of awareness and understanding of the value of urban water systems and the costs of improving water supplies, and wastewater and stormwater management
- poor recreational and bathing water quality, and poor information disclosure
- lack of investment and deferred maintenance, in part through incomplete pricing and inadequate financial contributions from new urban development
- institutional and regulatory barriers to improved management
- potential risk of infrastructure failure and resulting economic, health and environmental impacts (PCE, 2001a:5).

As outlined in section 3.3.4, in rural areas, agriculture imposes the greatest pressure on freshwater through vegetation clearance, land drainage and channelling, draw-off for irrigation and stock watering, and run-off and waste water discharges from farms and agricultural processing facilities. There are also pressures from dams, forestry, mining, introduced pests and weeds and potential impacts from climate change (MFE, 1997).

3.3.6 Air quality

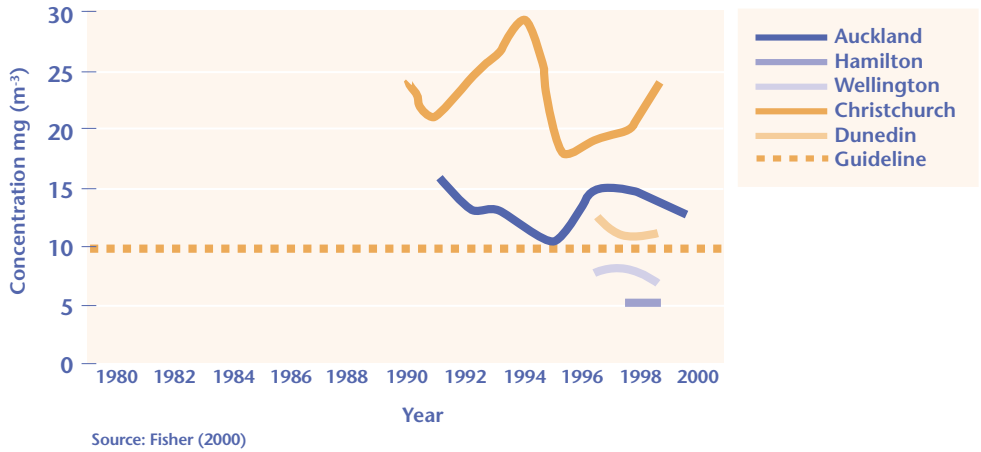
Air is one of the fundamental life sustaining elements. We have no choice but to breathe the air that surrounds us, irrespective of its quality. The state of air quality is, therefore, a key determinant of the health of people and the quality of the environment, and a significant indicator of sustainability.

Air quality in New Zealand is generally very good at many places, for much of the time. It is mainly influenced by geographical location, population density, industry, transport and domestic fuel composition and use, and seasons. Consequently, New Zealand's air quality issues vary in nature, time of year, and scale, but are primarily associated with urban areas.

Trends in air quality over the past 20 years indicates that air quality in New Zealand is getting better in some respects, but worse in others. Fisher (2000) points out that effects due to industrial emissions are decreasing, as the use of 'dirty' fuels (e.g. high sulphur fuel oils and coal) and old practices are phased out. However, some effects are getting worse as the population and vehicle fleet grows, particularly in urban areas.[23] In summary, the following are the key trends in peak contaminant concentrations relative to New Zealand's air quality guidelines (MFE, 2002c).

Getting worse

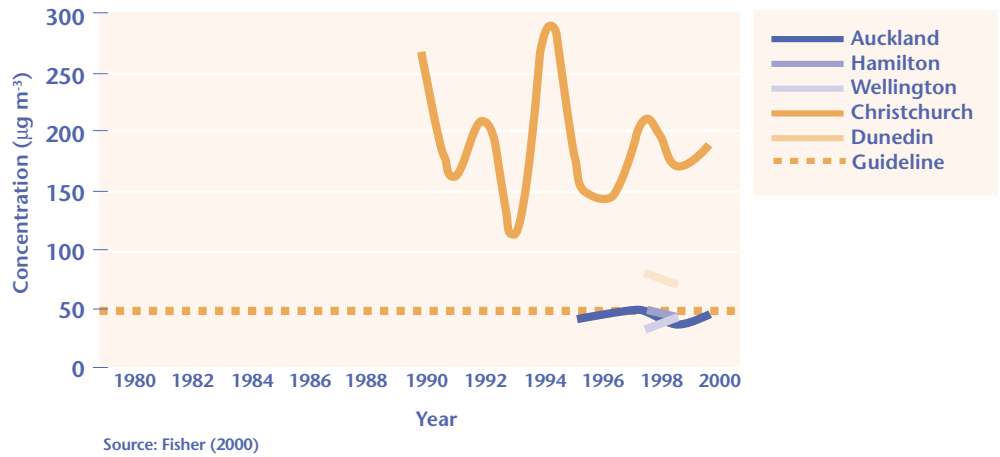
Figure 3.6 Peak Carbon Monoxide (8 Hours)



Source: Fisher (2000)

- Carbon monoxide (CO) concentrations in major cities, especially on or near busy roads, are increasing to levels which exceed guideline values. In Auckland, CO concentrations are higher than those in London and other larger cities. As older vehicles are replaced with newer more efficient ones CO concentrations should begin to decrease, but increasing congestion may affect this decline.

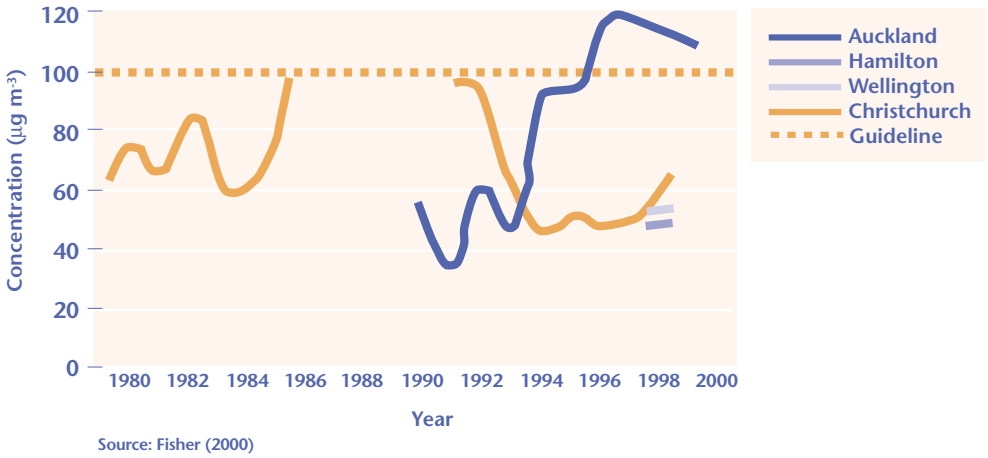
Figure 3.7 Peak PM_{10} (24 Hours)



Source: Fisher (2000)

- Inhalable particles (PM_{10}) [24] are of growing concern because of evidence of health effects at relatively low concentrations. The major sources are motor vehicles and domestic fires. Concentrations pf PM_{10} in some towns, such as Christchurch, have been reducing since the 1970s, but they are still high enough to cause adverse effects on people's health and further improvements are required.[25] Recent monitoring in several smaller towns, such as Nelson, has also found high PM10 concentrations caused mainly by home heating fires used in winter.

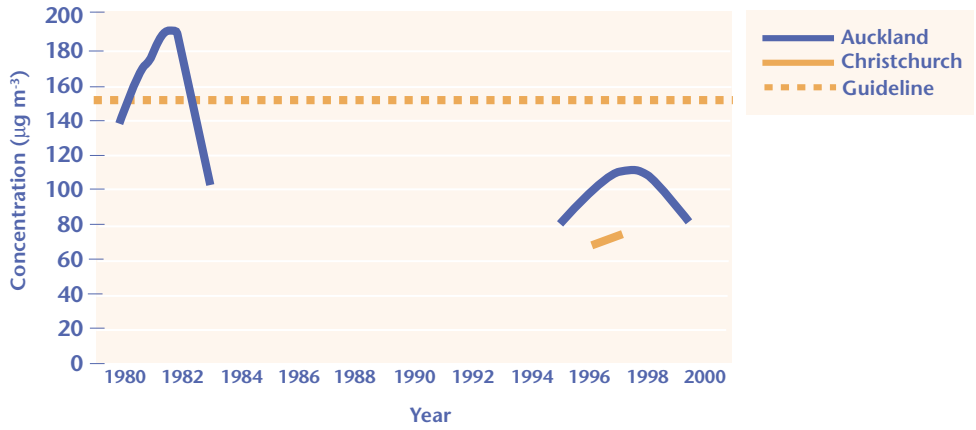
Figure 3.8 Peak Nitrogen Dioxide (24 Hours)



Source: Fisher (2000)

- Nitrogen dioxide concentrations, mainly from vehicle emissions, are increasing in many areas, especially in Auckland where they can exceed guidelines.

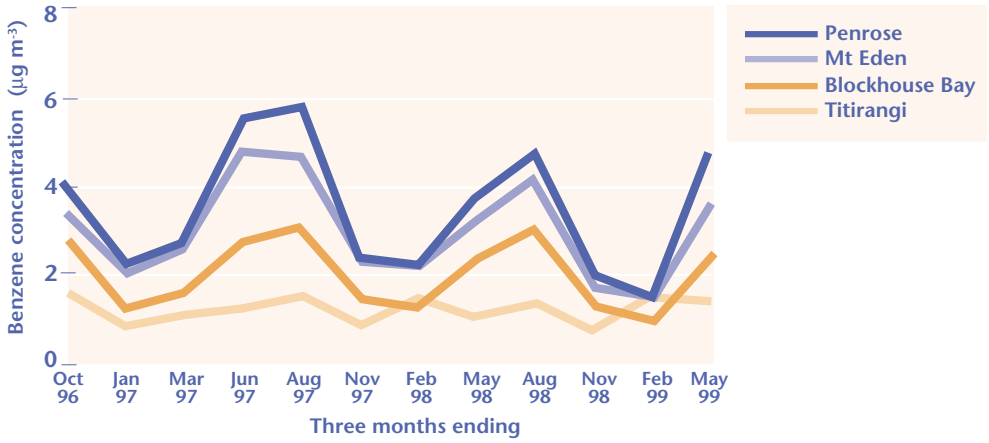
Figure 3.9 Peak Ozone (1 Hour)



Source: Fisher (2000)

- Photochemical 'smog', indicated by ozone concentrations is not as significant as in many other countries, but could get worse in cities like Auckland where precursor conditions (e.g. high hydrocarbon emissions and sunlight) increase.

Figure 3.10 Auckland Outdoor Residential Sites

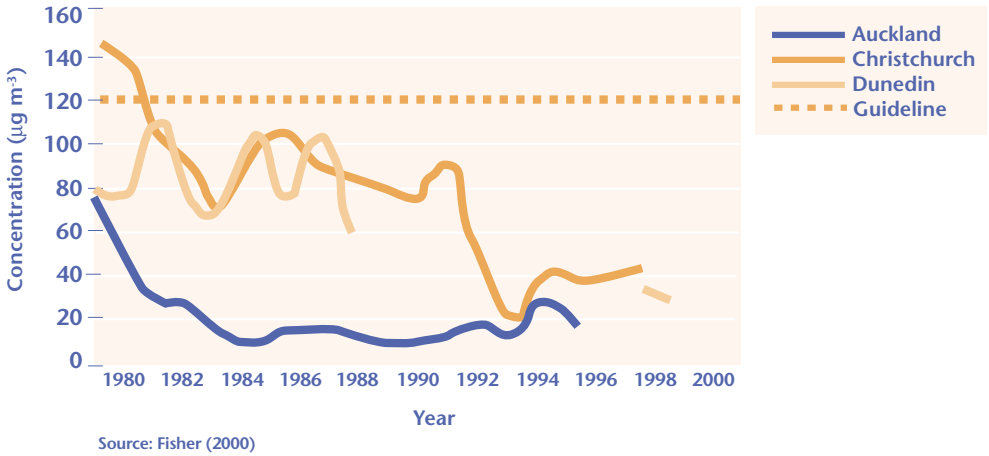


Source: Stevenson and Narsey (1999)

- New Zealand has a high level of benzene in petrol (5% by mass), resulting in higher than acceptable concentrations in air. Benzene concentrations in Auckland air regularly exceed the proposed new guideline of 3.6 microgrammes per cubic metre (annual average). Benzene levels should decline over the next few years as the amount of benzene in petrol is reduced in accordance with new fuel specifications.

Getting better

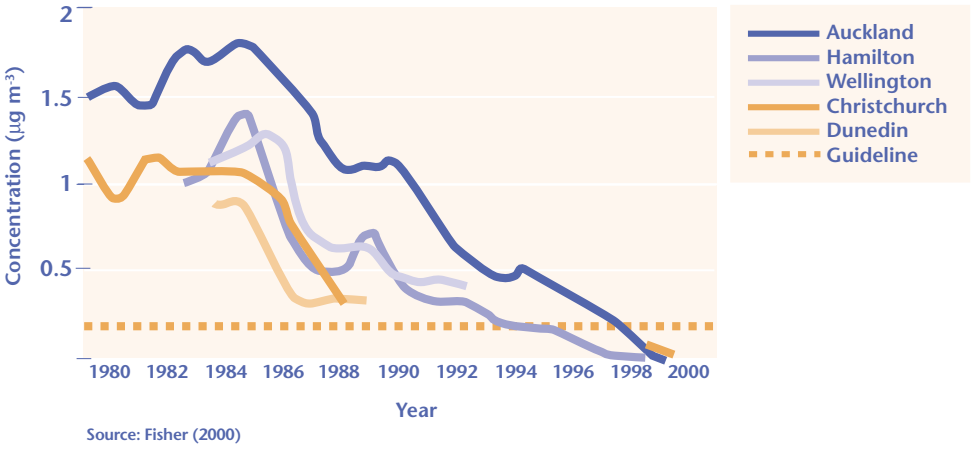
Figure 3.11 Peak Sulphur Dioxide (24 Hours)



Source: Fisher (2000)

- Concentrations of sulphur dioxide have fallen dramatically with the reduction in industrial and domestic coal use, which are the principal sources.

Figure 3.12 Peak Lead (3 Months)



Source: Fisher (2000)

- Lead in air concentrations shows a very significant downward trend due almost entirely to the removal of lead additives in petrol.

3.3.7 Biotechnology

Biotechnology[26] like climate change is of potential concern for New Zealand. It is a technology in the early stages of its development with many uncertainties attached. The potential impacts on the environment and economy and New Zealand's future sustainability are as yet unclear but are likely to be significant.

The results of the survey carried out by Statistics New Zealand indicate that the majority of known modern biotechnology activity in New Zealand is centred on research and development. The survey also found that enterprises that were undertaking biotechnology in the year ending 1999 were mostly aligned with New Zealand-based Crown research institutes and universities.

The current particular focus of debate in terms of biotechnology in New Zealand is genetic engineering or genetic modification. Genetic modification has become an integral part of biological and medical research with medical, commercial and industrial applications. Agricultural and food-related uses of genetic modification are a more recent development attracting wide public debate (RCGM, 2001). The degree of debate and concern led to the establishment of a Royal Commission into Genetic Modification in April 2000. A voluntary moratorium on the commercial planning of genetically modified crops was also established at that time.

The Royal Commission into Genetic Modification released its findings in July 2001. In response to the findings, the Government has proposed:

- the establishment of a bioethics council
- the development of a biotechnology strategy
- requirements for the co-existence and conditional release risks
- amendments to the HSNO Act to increase monitoring regimes and controls on research.

The moratorium on GM field trials was lifted but the commercial release of genetically modified organisms was banned for at least two years.

A continuum of use of biotechnology seems inevitable in New Zealand and globally unless compelling evidence emerges in the near future to indicate that the potential risks outweigh the potential benefits. For New Zealand the important questions are where on that continuum New Zealand will sit, now and in the future. They are also about what policies, legislation and regulatory systems are necessary to support New Zealand's chosen position and any shifts in that position over time (PCE, 2001e).

There are various strategic issues to be considered in the development and application of biotechnologies in New Zealand. These include:

- developing a purposeful strategic framework within which New Zealand can learn more about genetic science and engage constructively with the researchers, decision makers, policy agencies, tangata whenua and interested groups and sectors, to assess the potentials and risks of genetic science for our unique ecological, social, cultural and economic circumstances
- developing a more coordinated approach to policy, determination of research directions and priorities, and meaningful public consultation and participation in decision-making processes
- strengthening trust in science, in environmental management systems, and in the decision making processes
- improving the fundamental gaps in our knowledge of GM technologies. This includes how they function, and what effects they might have on New Zealand's unique biodiversity, on non-target species or the broader environment, on metaphysical and ethical levels, and on the mauri, tapu and whakapapa inherent in physical taonga
- improving gaps in our understanding of the attitudes and acceptability thresholds of New Zealanders, and of consumers in our overseas markets, for such technologies
- making information as accessible as possible to the public in a range of different forms and venues
- the need for ongoing scientific research and research concerning the interface of genetic science with New Zealand society (PCE, 2001e).

In any process of scientific or other research, there are knowns and unknowns. There may be confidence in what is known, and to some extent in our understanding of the priority areas yet to be studied. However, serious concerns arise with those issues, dimensions or impacts of the new technology where researchers cannot even conceptualise the kinds of developments or effects that may arise, let alone offer any reliable assessment or predictions. The comparison is sometimes made between genetic and nuclear technologies - between the claims made in the GE debates of today and the claims made for nuclear energy in the 1950s. New Zealand has not allowed some applications of nuclear technology, for example, power generation and military weaponry. *Will we to need be similarly selective in the application of biotechnology?*

3.3.8 Climate Change

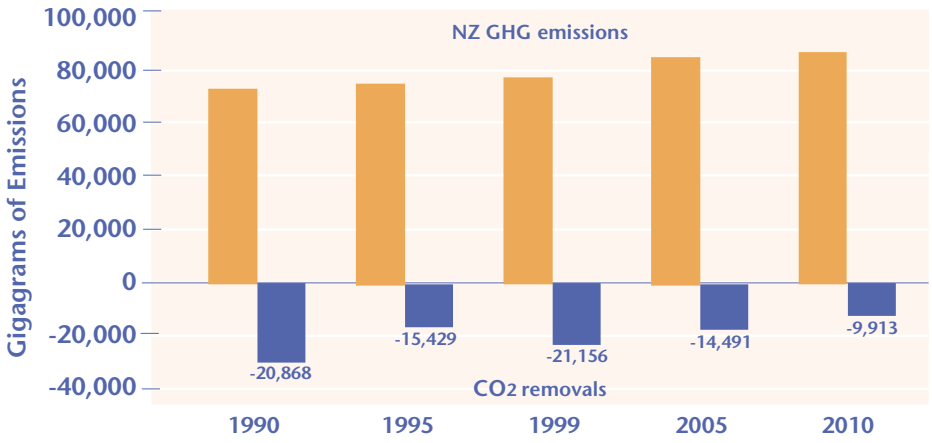
Given that much of our economic wealth is based on environmental and physical resources, climate change is of concern for New Zealand. A broad range of scientific evidence shows that the world has warmed during the 20th century. Evidence is getting stronger that most of the warming over the last 50 years can be attributed to human activities rather than to natural fluctuations, namely the emission of greenhouse gases. The climate has begun to change as a result of global warming and New Zealand is and will be affected. Changes will be gradual and their magnitude will depend on current and future emissions of greenhouse gases. Inertia in the climate system means that once started the changes cannot be stopped.

Overall trends in New Zealand's greenhouse gas emissions indicate that from 1990-1999:

- carbon dioxide (CO_2) increased by 20%
- nitrous oxide (N_20) increased by 5%
- methane (CH_4) decreased by 5%
- hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphurhexafluoride (SF_6) together decreased by 47%, largely due to a sharp decline in PFC emissions (MFE, 2002a).

Figure 3.13 shows the increase in gross greenhouse gas (GHG) emissions from 1990 and forecasts the likely trends to 2010 based on forecasts of energy use and population increase and assuming that policy intervention is minimal. It shows the quantity of CO_2 removals to 2010 (principally achieved through forests).

Figure 3.13 Trends in Greenhouse Gas Emissions in New Zealand



Source: Third National Communication under the Framework Convention on Climate Change (MFE, 2002). Emission forecasts for 2005 and 2010 assume constant emissions of CFC, HFC, and SF_6 based on 1999 levels.

New Zealand began its response to climate change in 1988 with the establishment of the New Zealand Climate Change Programme. This programme has focused on developing a comprehensive strategy which includes:

- an international programme
- a science programme
- development and implementation of policies and measures
- business and economic development
- monitoring, reporting, review and compliance.

Since 1997 domestic effort has been concentrated on enabling New Zealand to meet its target under the Kyoto Protocol. Recent key events include:

- the release of a *Climate Change: Domestic Policy Options Statement* in January 1999 for public submission
- the establishment of a Ministerial group to oversee the programme in May 2000
- the release of the Government's *Preferred Policy Package* in April 2002
- the Government's in principle decision to ratify the Kyoto Protocol during 2002
- introduction into the House of the Climate Change Response Bill on 21 May 2002 outlining a framework to allow New Zealand to meet its commitments under the Kyoto Protocol.

Policy measures to address carbon dioxide emissions include:

- the Energy Efficiency and Conservation Act 2000 and the National Energy Efficiency and Conservation Strategy (EECA, 2001b)
- voluntary agreements with major emitting industries aimed at reducing emissions
- various measures aimed at reducing the growth in emissions from the transport sector.

Other policy measures include ones that will protect and enhance sinks and reservoirs. This will mean designing a system that will enable carbon accumulation in eligible forest sinks to be verified and traded. As yet, there is no policy addressing methane emissions from the agricultural sector though research is being carried out in this area.

Global impacts of climate change, particularly on world markets and developing countries, will have repercussions for New Zealand but at this stage it is unclear what those effects will be. Current modelling is not yet sufficiently good enough to provide that type of information (MFE, 2001a).

The impacts of climate change in New Zealand are more broadly predictable. Temperatures are likely

to increase faster in the North Island than the South Island. Rainfall is projected to increase in the west and decrease in the east. While these general trends are considered relatively robust findings, the magnitude of the projected changes depends on a range of variables and is not yet clearly established. Sea levels are expected to rise under global warming but the scientific uncertainties are large. In the long term, rising sea levels are expected to increase the beach erosion and cause more frequent breaches of coastal protection structures (MFE, 2001a).

Under climate change, the agricultural sector will probably benefit from increased productivity and diversification but will also suffer increased risk of droughts, floods and water limitations in some areas. Climate change alone is considered unlikely to be the dominant cause of native species extinction in New Zealand but may act as a compounding pressure on ecosystems already under pressure. The main threat to urban environments is likely to be increased rainfall, flooding and erosion. Higher temperatures will also bring changes to health risks, reducing risk of some diseases and increasing others. For example, mosquitos that carry diseases such as dengue fever will be able to spread more easily in a warmer climate. Current predictions suggest that Maori are likely to be more affected by climate change because reliance on the environment both as a spiritual and economic resource makes them more vulnerable and less adaptable to climate change (MFE, 2001a).

Overall, there have been major advancements in our understanding of basic climate change science, projected changes in climate under greenhouse gas emission scenarios, and the impacts of such changes on a regional scale. However, impact projections are still limited by uncertainties about regional climate changes and the frequency of extreme events.

3.4 Gaps and barriers

Many of the gaps and barriers that make it difficult to implement sustainable development in New Zealand and overseas have been identified for some time and are well documented. The report, *Here Today, Where Tomorrow?* (PRISM and Knight, 2000) identifies and discusses a number of key gaps and barriers in four areas: institutions, people and attitudes, information and research, and tangata whenua and partnerships. Critical gaps include:

- a lack of leadership
- the need for capacity building
- the lack of fora to debate some of the hard issues
- insufficient recognition of diversity
- inadequate opportunities to share and compare knowledge and experience (PRISM and Knight, 2000:83).

Some of these impediments also came through so consistently and clearly in the interviews carried out for this report that they merit further discussion.

3.4.1 The concept

The term sustainable development can be a difficult, ambiguous concept to understand. Definitions abound (see chapter 2) and can be varied and contradictory. This can act as a disincentive for some people, discouraging them from working out what they can do to implement sustainable development. PRISM and Knight (2000:73) argue:

> *Many of the gaps and barriers arise because sustainability is a 'messy' concept. The 'pure market' model, in contrast, is clean, simple, transparent and therefore intuitively attractive. Sustainability must accommodate difference - but it is diversity and complexity that make it more challenging.*

Commentators suggest that the majority of New Zealanders have a relatively poor understanding of sustainable development but that it is growing.

The focus of most people is more likely to be on economic growth and employment. As some commentators note, New Zealanders often do not have a sense of personal responsibility for environmental issues. At a broad level, there seems to have been little active uptake except by some rural property owners, parts of local government and more recently parts of the business sector. Sustainable development requires an attitudinal change that some suggest will not occur until an external event of some kind forces change. At an international level, the Worldwatch Institute (2002:4) argues:

> *While awareness of the environmental and social issues central to sustainable development undoubtedly was raised in the 1990s, the new consciousness has yet to register improvements on the ground for most global environmental issues.*

This also applies to New Zealand.

3.4.2 Thinking and attitudes[27]

> *[sustainable development] tries to do what people do all the time anyway, i.e., weigh up income against life style against risk against social expectations and obligations against wanting to live somewhere nice etc etc. What sustainable development tries to do is make people (and institutions and governments) think about these things in a distal sense, i.e. over time and space and looking at impacts/effects that are remote or abstracted from their lives. I don't think New Zealanders have thought about sustainable development in that sense.* (Steven Knight, November 2001).

Certain attitudes and ways of thinking entrenched in our culture tend to make it very difficult to implement sustainable development. A culture of consumerism/hedonism encourages us to feel that happiness and success derives from purchasing and consuming more and more goods and services. The pressure to adopt sustainable development is low because we have a small population, a generally good supply of natural resources and a tradition of seeing New Zealand as clean and green (see section 3.1.2). Many New Zealanders feel comfortable with business as usual and there is little incentive to get to grips with sustainable development. However, as one commentator suggested: "If the population of New Zealand were as dense as Europe, New Zealand would be a pigsty".

Another dimension of thinking around sustainable development in New Zealand, particularly ecological sustainability, is influenced by the traditional focus on the conservation of lands with native flora and fauna that are retained in the public estate. This focus contrasts with the approach to lands in private ownership where exotic species predominate and the paradigm is sustainable management.

> *On the one hand we have a strong focus and commitment to the protection (the conservation) of native plants and animals, primarily on Crown-owned conservation lands. On the other hand we have the ongoing evolution of private land uses with trends in three directions: more intensive land uses, peri-urban lifestyle blocks and extensive uses such as forestry based on exotic species* (PCE, 2001h:ii).

Underpinning these approaches is a fundamental difference of views about the appropriate types of relationships that New Zealanders can and should have with indigenous ecosystems and their constituent plant species.

> *"The old adage, 'If you're stumped by a problem, make it bigger' is a neat pitch for systems thinking."* (Worldwatch Institute, 2002:22).

A further 'thinking' barrier to implementing sustainable development is linear or silo thinking, thinking which focuses on part rather than the whole of the big picture and misses the connections between seemingly separate activities. A number of interviewees suggested that Government still tends to operate in silo mode.

Until recently there has been little or no encouragement for cooperative work with everyone focused on achieving his or her 'own' outputs. The culture of Government thinking tends to be short-term, focused on efficient, least cost outcomes, and top-down. This may prevent the achievement of broader outcomes. By way of example, the Commissioner's 1999 investigation into marine management concluded that the institutional structures failed to reflect the complexities of, and the interconnections within, the natural, cultural and economic systems that require management (PCE, 1999b). This reflects the lack of an overarching framework or strategy to guide the many stakeholders towards sustainable management of the marine environment. Instead, the management structures are narrowly compartmentalised and focus on outputs rather than outcomes (see appendix 2 for more information).

A 2001 review of the New Zealand public management system concluded that there needs to be improvements in three areas: integrating service delivery across multiple agencies; addressing fragmentation of the State sector and resulting loss of focus on the big picture; and improving the systems by which state servants are trained and developed (SSC, 2001). The report suggests a culture shift in the State sector is required to one that is more dynamic and innovative, has a greater regional focus, more balance between outcomes, outputs and capability, and a longer-term focus.

Systemic inertia or complacency with the current situation acts as a powerful barrier to progress with implementing sustainable development. The system and people in the system tend to settle back into the default position of business as usual even if there is an effort at implementing sustainable development. This is especially so if the changes required to move towards sustainable development are recognised as being far reaching and daunting. Reaching agreement on how to change decision making [economic] systems creates too many difficulties to be tackled seriously outside academic or 'fringe' circles. Overcoming inertia and complacency requires sustained commitment and political will, not least because the concentration of power and wealth currently supports business as usual.

3.4.3 The reforms of the 1980s and 1990s

A period of reform was initiated in 1984 that aimed at the comprehensive restructuring of the state and economy in the direction variously called 'New Right", 'neo-liberal' or 'free market'. Between 1984 and 1993, these policies massively deregulated the economy, reformed the money system and sold off state assets (Belich, 2001). During this period, the public sector also went through a significant period of institutional, legislative and managerial change.

The dominance of New Right economic thinking in the 1980s and 1990s appears to have precluded consideration of sustainable development as a way of future growth in New Zealand. It was not discussed and debated in the way it was at the highest levels in other countries. The energy and focus required to implement these changes may also have precluded coming to grips with sustainable development as well. These reforms tended to reinforce linear and silo thinking by focusing on effectiveness and efficiency and encouraging separation of policy development from service delivery. There was a deliberate emphasis on setting up a policy and delivery system which separated out economic, social and environmental systems, making long-term integrated planning and analysis difficult.

The reform of the research sector has affected our capacity to obtain environmental information. No particular institution is responsible for it, hence the relative absence of such information as indicated in the country's first State of the Environment report (MFE, 1997).

3.4.4 Leadership

Most people interviewed for this report felt that strong leadership is required to make more progress with the implementation of sustainable development. Leadership is involved with the development of a vision, with communicating that vision and motivating and inspiring people to follow the vision. Leadership is critical to dealing with the changes required by the implementation of sustainable development.

Current trends in successful leadership suggest that leadership for sustainable development needs to be encouraging and supportive rather than directive. It needs to provide inspiration and empowerment, encouraging capacities to innovate and take risks. Leaders need to demonstrate a commitment to the many strands of sustainable development, inspiring others and enabling them to see the potential in new systems and policies to deliver across social, economic and environmental needs. They need to be cheerleaders, catalysts for change, keepers of sustainable development values, leading by example and demonstrating the capacity to strategise (Brosnahan, 1999). Given the nature of sustainable development, leadership needs to be provided at all levels and sectors of the community. It is not something that can and should only be provided from the centre. However, the commitment of CEOs and their equivalents are particularly important.

Macpac and The Natural Step

The Natural Step is a non-profit environmental education organisation that originated in Sweden in 1989. More locally, the Natural Step Environment Foundation, Aotearoa New Zealand, was established as a Charitable Trust in 1997. Among its goals, it aims to work with businesses and organisations to adopt strategies that lead to ecological, social and economic sustainability.

The Natural Step provides a framework for planning based on four key conditions for a sustainable society:

- Fossil fuels, metals and other minerals must not be extracted at a faster pace than their slow redeposit and reintegration into the Earth's crust.
- Products must not be produced at a faster pace than they can be broken down and integrated into the cycles of nature or deposited safely into the Earth's crust.
- Ecosystems cannot be harvested or manipulated in such a way that their productive capacity and diversity are impoverished, for instance by over-harvesting fish or forests so they cannot replenish themselves.
- Basic human needs must be met with the most resource-efficient methods possible.

Macpac Wilderness Equipment is a New Zealand company that has adopted The Natural Step framework. As a designer and manufacturer of high performance outdoor clothing and equipment, Macpac's involvement in the programme was motivated by a growing awareness of the impacts their operations are having on the natural environment. The framework provides them with a useful tool to identify and reduce those impacts.

Macpac staff members have been trained in The Natural Step and have identified priority projects and action plans. Key initial projects include auditing their carbon emissions and conducting an analysis of their pack fabrics. The organisation is trying to consume less oil and minerals by researching how to use materials that are not based on fossil fuels. The factory skip is also sampled regularly to identify ways to reduce waste. In addition, they are changing some suppliers to improve the ease of recycling and a staff member has volunteered to recycle organic materials from the cafeteria.

One of the problems that the company has confronted is that their ability to undertake research and development is somewhat limited by the scale of their operations. This has encouraged them to work more closely with other manufacturers and suppliers to ensure that all of their materials are sourced and produced 'inside the loop'.

Macpac also believes that its commitment to quality and durability is important. Instead of producing inferior, disposable consumer goods, they are actively seeking to minimise their contribution to the waste stream. They are working with The Natural Step to continuously improve the sustainability of their operations.

the Natural Step

See http://www.tns.org.nz/
http://www.macpac.co.nz/

Over the last ten years and until very recently, leadership from central government for sustainable development has been somewhat mixed despite the commitments to international initiatives such as Agenda 21. The basic essentials of sustainable development have been incorporated into environmental legislation and an increasing number of strategies (see chapter 4). However, such strategies are only initial steps towards environmental sustainability let alone sustainable development. (See also PRISM and Knight 2000 for a more detailed discussion of central government approaches to implementing sustainable development.)

Within central government in New Zealand, departmental proponents for sustainable development (Ministry for the Environment and Energy Efficiency and Conservation Authority) appear to be weaker than departmental opponents (Treasury and Ministry of Economic Development). This weakens the leadership potential for sustainable development within central government. Historically, government departments which undertake service delivery functions such as Housing NZ and the Ministry of Education, have not taken up opportunities to demonstrate sustainable development and consequently have not provided leadership. For example, procurement policies for new buildings do not incorporate sustainable architecture/design requirements.

The first Earth Summit in 1992 called for all governments to produce National Strategies for Sustainable Development (NSSD) by 2002.[28] The five-year review of Agenda 21 that took place in 1997 confirmed a target for all countries to develop national strategies for sustainable development (Earth Council, 2001). The current Government approved the development of a New Zealand sustainable development strategy in August 2001 but up until that time little had been done that specifically addressed sustainable development. The relative absence of national leadership demonstrated through a national strategy has been a key impediment through the 1990s.

Local government has been varied in its approach to implementing sustainable development (see also chapter 4). Attitudes seem to fall broadly into three categories:

- those who openly pursue sustainable development or Agenda 21
- those who are involved in programmes and policies that include sustainability but prefer not to label it sustainable development or Agenda 21
- those who consider that their mandate is confined to administering legislation, i.e. the RMA, and who tend not to get involved in social or economic initiatives (PRISM and Knight, 2000).

The spectrum, therefore, runs from councils who have demonstrated considerable leadership through to those who do not consider sustainable development to be part of their mandate at all. The Local Government Bill, currently before the House, will provide more direction by enabling local authorities to play a broad role in promoting the sustainable social, economic, environmental, and cultural well-being of their communities.

The business sector, or at least parts of it, has been actively involved in implementing sustainable development in recent years. In 1999 the New Zealand Business Council for Sustainable Development was established to provide business leadership as a catalyst for change to sustainable development. Several other organisations have also been established including the Business for Social Responsibility (BSR) and the New Zealand Centre for Business Ethics (NZCBE). A number of high profile business leaders are willing to champion sustainable development and are active in encouraging businesses to work on different management approaches (PRISM and Knight, 2000).

A range of businesses are involved in programmes designed to actively implement sustainable development principles, for example, the Natural Step, cleaner production and Zero Waste. There are many examples of partnerships between business

Local Government Leadership for Sustainable Development in the United Kingdom

Researchers have been examining the ways that local government agencies in England are implementing sustainable development principles (Corbet and Roberts, 2001). They have identified a wide variety of practical techniques that these agencies are pursuing to ensure that sustainable development becomes an integral and valuable part of their activities.

The researchers suggested that sustainable development could be mainstreamed in five key areas:

1. Recognising community aspirations
   - placing a strong emphasis on community involvement
   - developing staff facilitation skills to engage diverse groups within the community
   - moving from consultation to dialogue to foster ongoing, two-way communication
   - more closely aligning local authority priorities with community aspirations.
2. Dismantling 'tribal' thinking
   - developing mechanisms to foster interdisciplinary working that cuts across departments
   - developing the interpersonal skills of staff to build stronger partnerships.
3. Providing community leadership
   - providing leadership that balances short-term thinking and explores long-term implications of decisions
   - developing capacity in the community with education that helps people participate in decision making
   - adopting indicators to communicate complex information in an accessible way.
4. Getting one's own house in order
   - setting an example of good practice
   - embedding sustainable development thinking throughout an organisation
   - making sure that actions support priorities.
5. Increasing the capacity to work through influence
   - developing good relationships
   - developing staff facilitation skills
   - breaking down professional boundaries and relinquishing some control to better respond to the desires of the community.

The researchers also identified a variety of barriers that local authorities in England are facing in this area. Among these, they noted the conflicting messages provided by different central government agencies, the lack of integration among central government policies, a shortage of good interpersonal skills among staff, a risk-averse culture and a lack of organisational commitments. Opportunities for overcoming these barriers were also identified. These included prospects for better dialogue between central and local government, encouraging integration of central government initiatives, tolerating and encouraging different ways of thinking, and providing further training and development for staff members.

Based on their analyses, the researchers believe that there is a vital role for local authorities to provide community leadership in this area. In addition, one of their key recommendations was that local government needs guidance and support from central government to mainstream sustainable development initiatives.

and other sectors implementing cleaner production and energy efficiency programmes (see PRISM and Knight, 2000 for more information). Despite this, sustainable development is not the common language of business and the priority given to short term economic and financial matters tends to reinforce the status quo.

The contribution of the NGO sector to the implementation of sustainable development is hard to assess because the sector is diverse and relatively disconnected. It is difficult to find out who is doing what. Information available indicates that there are many small groups all around New Zealand making contributions in their local communities (see PRISM and Knight, 2000 for more information). The Royal Society of New Zealand recently convened a sustainable development 'scoping meeting' aimed at developing a general overview of all sustainable development activities, exchange of information, encouraging collaboration, and initiating new combined initiatives in sustainable development. This process is on-going.

Environmental NGOs have been pivotal leaders in improving the protection and management of New Zealand's native plants and animals, primarily on crown owned conservation lands. Such groups have also been champions for better pest management, biosecurity and marine management. This focus is principally one of 'environmentalism' and it could be argued that environmental NGOs have not yet engaged in the

New Zealand Business Council For Sustainable Development

providing leadership for the business community.

Mission

To provide business leadership as a catalyst for change toward sustainable development, and to promote eco-efficiency, innovation and responsible entrepreneurship.

Aims

Aims and strategic directions, based on their mission include:

Business leadership - to be the leading business advocate on issues connected with sustainable development.

Policy development - to participate in policy development in order to create a framework that allows business to contribute effectively to sustainable development.

Best practice - to demonstrate business progress in environmental and resource management and corporate social responsibility and to share leading-edge practices among their members.

Global outreach - to contribute to a sustainable future for developing nations and nations in transition.

See the NZBCSD website for more information, www.nzbcsd .org.nz

much broader sustainable development agenda. This may be because the imperative to protect endangered species and ecosystems has dominated efforts but it may also indicate a real tension in moving towards a sustainable development paradigm. This may be because of their perception that environmental concerns can be subsumed by economic and social concerns when it comes to implementing sustainable development, particularly under the weak sustainability model.

3.4.5 Participation

Agenda 21 emphasises that a fundamental prerequisite to the achievement of sustainable development is broad public participation by groups and communities in decision making (section III of Agenda 21). Principle 10 of the Rio Declaration on Environment and Development states that "environmental issues are best handled with the participation of all concerned citizens at the relevant level". The picture within New Zealand seems to be rather mixed.

Voter turnout in general elections has declined from 88% in 1984 to 77% in 1999. Voter participation in the 2001 local government election was just over 48%, 5% less than the 1998 elections (Reid, 2001). Declines in voter participation may be associated with decreased levels of trust in political institutions as well as with increasingly disproportional electoral outcomes (Ministry of Social Policy, 2001).

Within local government, communities are offered an increasing number of opportunities to contribute to local decision making through a variety of planning processes under the LGA and the RMA. The average number of submissions made to local authority annual plans has increased from 67 in 1991/92 to 339 in 1999/2000 (Reid, 2001). Such opportunities for making submissions do not in themselves guarantee meaningful participation but at least the potential is there.

A number of changes have been made or are to be made to local government legislation aimed at improving the capacity of communities to participate in the future development of their areas. The Local Electoral Act 2001 requires local authorities to review whether or not to move from the current system for electing councillors to a Single Transferable Vote option. The STV option may have the effect of broadening the range of representation and 'voices heard' in local government. Environment Bay of Plenty's recent initiative to increase iwi representation on the council is also important in terms of broadening the range 'voices heard'. The Local Government Bill includes provision for the development of long-term community plans based on sustainable development principles (see chapter 4 for more information about the Bill).

A PCE investigation into tangata whenua participation in environmental management (PCE, 1998d) concluded that the current legislation provides a strong basis for tangata whenua participation in policy development and management for the natural environment. The

RMA gives recognition to consultation, traditional values and relationships, the principles of the Treaty and the ongoing duties of kaitiakitanga. It found greater and more widespread awareness amongst some councillors, council staff and developers of the practical benefits of more effective involvement of tangata whenua. Iwi and hapu also had greater awareness of the opportunities and processes for their involvement and for the practical expression of kaitiakitanga in sustainable resource management. Despite these useful gains, there were still no national policy frameworks or standards to ensure efficient, consistent and reliable systems for tangata whenua participation in environmental management. Nor was there appropriate accommodation of the values and concerns of tangata whenua as required under the RMA (see appendix 2 section A2.4).

Other ways of expressing and formalising participation in environmental decision making are continually being developed, for example iwi or hapu management plans. Iwi management plans establish tangata whenua goals, practical objectives, priorities and expectations for appropriate management of natural taonga and the wider environment in the rohe. Such plans can provide frameworks and guidance for consultation and practical working relationships between tangata whenua and agencies. Provisions in the RMA require local authorities to have regard to iwi management plans.

There is a multitude of non-governmental groups of all sizes working in New Zealand on projects relevant to sustainable development. (The GreenPages directory, www.greenpages.org.nz, is a source of information on some of these groups.) Many people make a significant contribution to the sustainability of New Zealand through volunteering for these groups.

Zero Waste Community Projects

The mission of the Zero Waste New Zealand Trust is to encourage and motivate all sectors of New Zealand society to work towards a target of zero waste. The trust provides guidance and financial assistance to individuals, businesses, local authorities and non-profit organisations to help them work towards this goal.

Zero Waste principles aim to change people's perceptions of 'waste' and to redesign the ways that resources and materials flow through society. Their objective is to maximise recycling and waste minimisation initiatives and to ensure that new products are designed to be reused, repaired or recycled back into the marketplace and the natural environment.

The trust is also working with over 40 local community organisations to create sustainable employment opportunities. In the Far North, for example, they have provided assistance to the Community Business and Environment Centre (CBEC). This non-profit enterprise was established in 1989 to foster environmentally sustainable businesses and employment prospects in the region. They now run a comprehensive recycling programme under contract to the Far North District Council. As part of their operations, CBEC runs the Kaitaia recycling station. Of the 40,000 cubic metres of refuse entering the station each year, approximately 26,000 cubic metres are recovered through recycling and reuse. CBEC have managed to handle this 'waste' at about two thirds of the cost of more traditional approaches.

At the other end of the country, Innovative Waste Kaikoura is another community group working with the trust. This organisation was formed in June 2000 as a non-profit venture between Kaikoura Wastebusters (started by a group of concerned residents in 1996) and Kaikoura District Council. They are currently diverting over 50 percent of the 'waste' from the local landfill and working towards a goal of zero waste by 2015. They employ five full time staff members who are involved in creating substantially more employment opportunities through a variety of waste reduction initiatives.

The success of these schemes has helped the Zero Waste Trust to advocate the benefits of pursuing a zero waste philosophy. They believe it can be used to improve environmental sustainability, create jobs, reduce waste costs and to foster local economic development.

See http://www.zerowaste.co.nz

Ngai Tahu and the Mountains to the Sea

Ngai Tahu are developing an iwi management plan for the Waitaki Catchment area that could be used as a template for other runanga or tribal councils. The plan is based on the philosophy of ki uta ki tai - from the mountains to the sea and everything in between.

A central idea of the plan is that everything in the catchment of a river - ki uta ki tai - affects the health of the water and the plants and animals that live in and around that waterway. The health of people is dependant on these plants and other animals that provide them with sustenance. The essence of this approach is encapsulated in:

Toi tu te marae nui a Tane
Toi te marae a Takaroa
Toi tu te Iwi

This denotes the belief that the environment needs to be maintained in the best possible state. Thus, if the realms of Tane (God of the forests) and Takaroa (God of the Seas) are sustained and utilised in an appropriate manner, then the iwi or people of an area can also be sustained.

Instead of compartmentalising the environment into different parts, Ngai Tahu are taking an approach that recognises the inter-connectedness of social, economic and environmental issues in a catchment area. This will involve looking at better integration across media such as water, land and the coast. They are also planning to work closely with communities that are situated within the catchment.

As part of this project, Ngai Tahu have already released a Freshwater Policy Statement. It is anticipated that the rest of the plan will be completed by 2005.

Other organisations such as the Queen Elizabeth II National Trust and New Zealand Landcare Trust work in partnership with property owners seeking more sustainable outcomes. The QEII National Trust's principal function is to protect privately owned areas of open space through covenants, without jeopardising the rights of ownership. To date, over 1,450 Open Space Covenants covering in excess of 54,500 hectares have been registered. These covenants protect a variety of open space, including forest and forest remnants, wetlands, lakes, peat lakes, coastline, tussock grasslands, tracts of rural landscape, archaeological sites and geological formations. The Landcare Trust provides an independent voice on landcare, sustainable land management and biodiversity. It seeks to set up and empower land care groups, providing information and developing networks and partnerships. Groups are voluntary, community based and encouraged to set their own agendas. Issues include sustainable farm production, protection and rehabilitation of sensitive environmental areas, pest and weed control, native bush monitoring, river monitoring and rehabilitation, as well as biodiversity enhancement (protection of native flora and fauna).

The Government has also established two independent funds, available to private and Maori landowners, to protect and assist with the management of large areas with significant conservation values. In 1990, Government established the Forest Heritage Fund, called the Nature Heritage Fund since 1998 to reflect a widening of its mandate. In its first eleven years, the Fund has protected through purchase or covenanting, 184,000 hectares of forested and other high value lands. Another similar fund, Nga Whenua Rahui, was established in 1991 to help protect Maori-owned forested lands through a unique covenanting arrangement that is renewed by future generations of owners. To date, over 115,000 hectares have been protected by Nga Whenua Rahui.

A trend which is evident when looking at how sustainable development is being implemented in New Zealand, is that there is a lot of activity at a local level and relatively little at a national level. The diversity and number of the local groups involved in sustainable development activity is a strength for New Zealand. These local initiatives are vitally important for the implementation of sustainable development in New Zealand. However, those initiatives appear to be fragmented and as Casswell (2001:31) argues:

Community initiatives depend upon a supportive policy environment to make a difference in people's lives. Local level action in isolation is unlikely to ameliorate the effects of a policy environment hostile to its goals. Community initiatives inform the need for central policy change if lines of communication between the community voice and policy advisors are open. Central government has a key role to play as a funder of community initiatives and can also encourage support by relevant agencies at the community level.

Without robust national policy action and leadership that connects and encourages, local initiatives will only take us so far.

3.4.6 Cycles

Short-term timeframes and short cycles are characteristic of democratic processes in New Zealand. Decisions are made within the context of a timeframe relating to the parliamentary three-year term of office. Tax payers and ratepayers prefer to see more immediate results. Short-term changes in the political environment can undermine long-term policy commitment. Economic cycles, influenced by world trading conditions, business confidence, fluctuating exchange rates and shareholder expectations, are sensitive and change suddenly. This leads to an emphasis on short-term returns over long-term returns. By contrast, environmental goals need long implementation time frames. Social goals have a variety of time frames from short to long.

Understanding the interactions between different cycles is a key to sustainable development. Experience seems to suggest that the dominance of one type of cycle leads to instabilities and potential collapses in the others. Successful implementation of sustainable development will require a commitment to long-term strategic approaches that endure well beyond a three-year electoral cycle.

3.4.7 Spatial scales

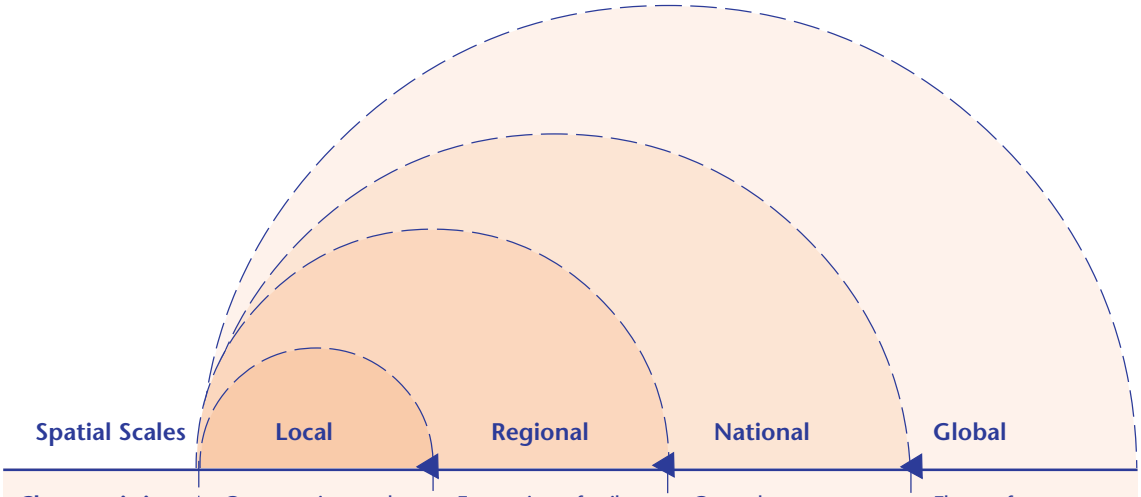
Recognition of the spatial or geographic scale of environmental processes and problems is a key to the implementation of environmental sustainability for a number of reasons. Some problems happen locally and can be resolved locally by the community they occur in. Other environmental problems happen nationally and globally but may also manifest locally. Figure 3.14 illustrates the types of environmental processes, problems and organisations involved and the different types of solutions being used. The higher the scale of the problem the more important it is to also have actions addressing the problem appropriate to the scale. Environmental issues that are national in scale can and must often be addressed locally but that will not be sufficient usually to resolve them. National and regional action is also required. The interaction between the scales is often dynamic. Local levels can influence higher just as much as vice versa.

When decision makers fail to grasp the scale at which environmental issues are happening people can become confused which impedes progress. On the other hand, matching a variety of tools to the right scale offers the potential for resolution of environmental problems. Categorising environmental issues according to geographic scale also helps clarify the responsibilities of different agencies.

3.4.8 Opportunities for discussion and debate

Given the range and varied understandings about sustainable development, a key to progress is discussion and debate about what sustainable development means and how we can go about implementing it. A number of people have commented on the lack of opportunities for debating sustainable development. PRISM and Knight (2000) comment on the lack of fora for debate, the insufficient recognition of the diversity of opinion that exists around sustainable development and the lack of opportunities for people to share and compare knowledge. Tensions

Figure 3.14: Spatial Scales of Environmental Problems



Spatial Scales	Local	Regional	National	Global
Characteristic processes	Construction and demolition of buildings Subdivision and development	Formation of soils Movement of water Climate	Coastal waters Seas	Flows of energy Consumption and production
Characteristic environmental problems	Noise Odour Air pollution City expansion Water supply Waste management	Sustainable land management Over fertilisation Soil erosion Water quality	Biosecurity - pests and weeds Pollution Biodiversity loss	Greenhouse effect Ozone layer depletion
Organisations	City and district councils Regional councils	Regional councils	Central government NZ Business Council for Sustainable Development Zero Waste	United Nations WTO OECD The Natural Step
Actions	RMA District plans Strategic and annual plans Zero waste programmes Landcare groups Watercare groups Earthsong eco-development Macpac and TNS	Auckland Regional Growth Strategy RMA Regional plans ARC Big Clean-up Transport planning Pest management	Biodiversity Strategy RMA NPS on biodiversity Biosecurity Strategy	MEA's, eg, Convention on Biological diversity Kyoto Protocol

Source: adapted from De Jongh and Captain (1999)

and contradictions are not exposed and resolved. The recent initiative by the Royal Society drawing together groups with an interest in sustainable development is providing a valuable opportunity for such discussion and debate.

3.4.9 Resourcing

Barriers to making more progress with sustainable development in New Zealand, particularly with central and local government agencies are likely to be for a number or combination of reasons, including:

- insufficient resources
- lack of understanding of sustainable development
- unwillingness or inability to commit to the broad, long-term implications of sustainable development
- other, more pressing and specific priorities (e.g., statutory obligations).

Generally, the budgets available for initiatives, be they research, community consultation or implementation programmes tend to be small, short term and fragmented. Projects start up but fail in the medium term because the funding is no longer available. Research focuses on small parts of the whole picture because the investment is not there for a more comprehensive approach. We lack data about our natural resources and we also lack systems for dissemination, storage and use of any data that is available (PRISM and Knight, 2000; see also appendix 2 section A2.6.1). Key implementation agencies such as territorial authorities have responsibility for large land areas with a small population and corresponding low rating base (PCE and Auditor General, 1999). Without external sources of funding, few resources are available.

The capacity of people to understand how to implement sustainable development is compromised by under investment in capacity building, education and implementation.

3.5 Key points

- New Zealand has many unique qualities. Ecologically it is a remnant of Gondwana land. Socially we have both the Treaty of Waitangi and a diverse population. Economically we are dependent on the quality and productive capacity of our environment, our natural capital. We value our environment enormously, especially access to clean water and air and beautiful natural environments. A productive and healthy natural environment is a fundamental base to our economy. All of this is often expressed as an image of New Zealand as 'being clean and green'.
- Comparatively, New Zealand is clean and green but there are risks to our future environmental sustainability from the legacies of the past. There are a variety of drivers including the economy, consumption and production patterns. There are also various key trends: globalisation, building sustainable cities, managing the links between human and environmental health, managing freshwater resources, and climate change.
- Maintaining the ecological sustainability of key parts of our environment will be critical to the sustainable development of New Zealand as a whole. Intensification of our urban communities and agricultural land use is challenging the ecological sustainability of key environmental resources, particularly freshwater resources, soils and air quality. Current information indicates that impacts on these environment resources are and will continue to be unsustainable if we continue with business as usual.
- The impacts on New Zealand of other key trends, namely globalisation, climate change and biotechnology, are as yet uncertain. That uncertainty is a key challenge for the sustainable development of New Zealand. The challenge is how to minimise the impact of unpredictable risks but also to be in a position to take advantage of the benefits should it become clear what those benefits are.
- Values and ethical frameworks are a critical element of the implementation of sustainable development. Sustainable development requires us to debate, understand and incorporate new or at least expanded sets of values.
- Thinking and attitudes are also critical element of the implementation of sustainable development. Traditional linear and short-term thinking is acting as an impediment. Attitudes value the status quo. But new ways of holistic, systemic thinking are also showing the way forward. In order to advance sustainable development and to maintain and continue with the quality of life we like, we need to develop a fundamental understanding of ecological limits and the importance of maintaining natural capital. Education for sustainable living will be critical in terms of spreading new ways of thinking and knowledge.

- Education for sustainability is needed:
  - so the whole population understands what sustainable development is and why it is important
  - so everyone understands the ecological limits in place on our planet and particularly in New Zealand, and the importance of functioning within those limits
  - to challenge our dominant consumerist, individualist, democratically apathetic culture
  - to foster a new sustainability ethic, that includes self responsibility regarding individual behaviour
  - to train young people to think and behave in sustainable ways as second nature, i.e. to consider the consequences of their actions
  - to empower individuals and communities to become ecologically aware and thus to play a part in future sustainable development decision making.
- Leadership in all sectors is important as a driver of change. It is critical to dealing with the changes required by the implementation of sustainable development because sustainable development has to involve a move away from the status quo towards a new vision and new ways of doing things. Public acceptance of the need for change is a major challenge for the Government and non-government sectors seeking to promote sustainable development.
- A key impediment to the implementation of sustainable development in New Zealand is insufficient knowledge and capacity to support its implementation. This is knowledge in its broadest sense - research, information, indicators and people with the technical capability to produce that kind of knowledge. There appears to be a lack of accessible information about how to implement sustainable development and a gap in terms of translating information that does exist into material that can be used by the community (including business and government) to facilitate debate and understanding of sustainable development issues. Sustainable development is made tougher because we do not have solid scientific frameworks and knowledge on which to base policy development. The relative lack of established environmental indicators and the absence of indicators for sustainable development is also part of this picture.
- Sustainable development needs to be implemented over a complexity of spatial and temporal scales. Different types of actions work at different spatial and temporal scales from zero waste for a business at the local level through to a national strategy for sustainable development for the whole of New Zealand. This necessitates a wide variety of tools and actions and New Zealand has not used all of what is available. Our commitment to education for sustainable development has been relatively low key and we have not used the range of economic instruments that are being used overseas.

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1 Royal Commission on Environmental Pollution, October 1998.

2 In the context of this report, the term 'well-being' also includes consideration of environmental needs. This was not explicitly mentioned in the RCGM report.

3 See the findings of the Rio+10 community programme in 2001 in http://www.mfe.govt.nz/new/pages/involved.html.

4 http://www.ew.govt.nz/ourenvironment/indicators/community/communities/p2a/report.htm#Heading2.

5 The energy required to produce a unit of gross domestic product. When the 'energy intensity' measure goes down, it indicates that things are being done, or produced, with less energy input. Hence a reduction of the energy intensity is a positive indicator that energy is being used more efficiently.

6 See the OECD database on environmentally related taxes in http://www1.oecd.org/env/policies/taxes/index.htm.

7 Laird. 2002.

8 Cited in a speech by then Reserve Bank Governor, Don Brash, 25/1/02 http://www.scoop.co.nz/mason/stories/BU0201/S00075.htm.

9 Jason Clarke, key note speaker at the 2002 New Zealand Environmental Education Association conference http://www.nzaee.org.nz/news/files/Jason%20Clarke.doc.

10 See http://www.eednz.org.nz/about.html.

11 See http://envbop.govt.nz/www/EnvironmentalEducation/EnvironmentalEducation.htm.

12 See more at www.ew.govt.nz/educationprogrammes/.

13 See more at www.waitakere.govt.nz/abtcit/ei/index.asp.

14 GDP Statistics: At 1995/1996 prices. Statistics NZ changed the official system for the measurement of GDP in 1988. 1981 and 1986 figures were sourced by creating a linked series between the old and new systems.

15 1981-2000 figure. 2001 data will be published in the Energy Data File July 2002. This will be released at the end of August 2002.

16 Urban land statistics; There is currently no reliable data available from any agencies to calculate the growth in urban land areas since 1980. The figure cited in the 1998 investigation was sourced from MFE's 1997 State of the Environment report. It is very unlikely that the definition of 'urban land areas' used in the calculations gave much regard

to actual land use patterns within territorial urban boundaries. More recently, however, a NZ Land Cover Database (NZLCDB) has been established by MAF and MFE. The database was constructed from satellite images acquired in 1996/97 and provides an accurate indication of urban land areas. Additional images will be taken on an ongoing basis (every 5 years) to enable changes in land use patterns to be established.

17 1983-2001 figure.

18 Car Statistics: The Land Transport Safety Authority collects data on passenger car numbers. Due to changes in their systems, data from 1980-1995 only identified the total number of vehicles licensed. Data from 1996 onwards represents the total volume of vehicles registered on the Motor Vehicle Register (whether licensed or unlicensed). Nonetheless, vehicles are automatically de-licensed if they are not registered for more than one year so this figure should provide a fairly accurate portrayal of the increase in (registered) cars in NZ.

19 Small airborne particles less than 10 microns (or micrometres) in diameter.

20 California Environmental Protection Agency Air Resources Board news release (02-14) of 31 January 2002.

21 Ozone at ground level is a 'secondary' pollutant formed when nitrogen oxides and volatile organic compounds combine in a photochemical process in the presence of sunlight. Motor vehicles are a significant source of the pollutants that combine to form ozone. Incidents of such smog typically occur in Auckland during summer months.

22 Not all nitrogen losses from pastoral or cropping systems result from applied nitrogen. Significant losses of symbiotically fixed nitrogen can also occur.

23 Auckland's burgeoning vehicle fleet is growing at 4% per year, faster than the population (Fisher, et al., 2002).

24 PM10 refers to fine dust particles less than 10 micrometres in diameter, which can be inhaled into the deeper parts of the lungs.

25 For example, Environment Canterbury is imposing restrictions on the use of home heating fires as well as creating incentives to move to cleaner heating appliances.

26 Modern biotechnology is defined as involving genetic manipulation and including the following: Bio-processing - manufacture of fermented products like cheeses, yoghurt, breads, brewing, pharmaceutical and vaccine manufacture and so on, provided that genetic manipulation has occurred; Bio-prospecting - genetic engineering to produce new goods or services whose practical applications may not yet be known; Modern gene/protein technologies (genomics and proteomics), eg producing genetically modified organisms; Other genetic manipulations, eg antibiotic strain improvement and selection; DNA-based services - includes gene technologies used on diagnostics (medical, food hygiene, and forensic and environmental diagnostics); and Bio-informatics - the electronic data management of biological information, such as the archiving of gene sequencing information (SNZ, 2001:8).

27 This section draws extensively on the interviews carried out for this investigation.

28 http://www.earthsummit2002.org/es/nssustainable development /default.htm

Section 4

Sustainable Development Initiatives

Sustainable development is not something that New Zealand has imposed on itself. New Zealand, along with many other countries, adopted the concept and Agenda 21 principles when undertakings were given at the 1992 Earth Summit. Sustainable development is a global initiative to be implemented at national and local levels.

This chapter outlines some sustainable development-related strategies and initiatives underway in New Zealand and elsewhere. By drawing attention to some examples of approaches taken to promote sustainable development and put it into practice, it is intended to highlight the fact that there is support for the concept among a wide range of organisations. Sustainable development can be implemented in a variety of ways that benefit communities, businesses and the environment.

4.1 New Zealand strategies and initiatives

This section discusses a number of examples where aspects of sustainable development principles have, to some extent, been incorporated into legislation, policies and other programmes in New Zealand.

4.1.1 Sustainable development in legislation

The implementation of sustainable development within New Zealand is encouraged and driven by a number of statutes that manage activities affecting the environment. Aspects of sustainability mentioned in statutes are outlined in table 4.1:

Table 4.1 Sustainability in Legislation

The Environment Act 1986

An Act to-.. (c) Ensure that, in the *management of natural and physical resources*, full and balance account is taken of –

(i) the *intrinsic values* of ecosystems; and

(ii) all *values* which are placed by individuals and groups on the quality of the environment; and

(iii) the principles of the Treaty of Waitangi; and

(iv) the *sustainability* of natural and physical resources; and

(v) the needs of *future generations.*

Resource Management Act 1991

Section 5. Purpose

(1) The purpose of this Act is to *promote the sustainable management of natural and physical resources.*

(2) In this Act, "sustainable management" means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their *social, economic, and cultural wellbeing* and for their health and safety while—

(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of *future generations;* and

(b) *Safeguarding the life-supporting* capacity of air, water, soil, and ecosystems; and

(c) Avoiding, remedying, or mitigating any *adverse effects of activities* on the environment.

Fisheries Act 1996

Section 8. Purpose—

(1) The purpose of this Act is to provide for the *utilisation* of fisheries resources while ensuring *sustainability.*

(2) In this Act—

"Ensuring sustainability'' means—

(a) Maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of *future generations*; and

(b) Avoiding, remedying, or mitigating any *adverse effects of fishing on the aquatic environment:*

"Utilisation'' means conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing.

Hazardous Substances and New Organisms Act 1996

Section 4. Purpose of Act—

The purpose of this Act is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms.

Section 5. Principles relevant to purpose of Act—

All persons exercising functions, powers, and duties under this Act shall, to achieve the purpose of this Act, recognise and provide for the following principles:

(a) The *safeguarding of the life-supporting capacity* of air, water, soil, and ecosystems:

(b) The maintenance and enhancement of the capacity of people and communities to *provide for their own economic, social, and cultural wellbeing* and for the reasonably foreseeable needs of *future generations.*

Energy Efficiency and Conservation Act 2000

Section 5. Purpose—

The purpose of this Act is to promote, in New Zealand, energy efficiency, energy conservation, and the use of renewable sources of energy.

Section 6. Sustainability principles—

In achieving the purpose of this Act, all persons exercising responsibilities, powers, or functions under it must take into account—

(a) the health and safety of people and communities, and their *social, economic, and cultural well-being*; and

(b) the need to *maintain and enhance the quality of the environment*; and

(c) the reasonably foreseeable needs of *future generations;* and

(d) the principles of the Treaty of Waitangi.

Local Government Bill

Section 3 Purpose

The purpose of this Act is to—

(a) establish the role of local authorities in the democratic governance of communities; and

(b) recognise the diversity of—

(i) communities within New Zealand; and

(ii) communities of interest within districts; and

(c) enable local authorities to play a broad role in promoting the *sustainable social, economic, environmental, and cultural well-being* of their communities; …

Some of the key principles of sustainable development are addressed in a variety of ways in these statutes, including:

- management of natural and physical resources
- safeguarding the life supporting capacities of the environment
- taking account of the social, economic, and cultural well-being of communities
- accounting for the needs of future generations.

Those people who are required to implement such statutes or to comply with them are expected to develop an understanding of sustainability. In contrast, a review of statutes affecting social and economic issues reveals that such statutes do not incorporate equivalent principles of sustainability. This implies that sustainable development has been regarded as an 'environmental' issue from a legislative point of view.

The most influential statute so far has been the Resource Management Act (RMA), although its focus is on sustainable management (of natural and physical resources) rather than the broader concept of sustainable development (incorporating environmental, social and economic considerations). The Local Government Bill, currently before Parliament, is intended to address these broader considerations through 'long-term community plans' to be developed by local authorities in consultation with their communities.

The RMA - asset, impediment or necessary learning curve to achieving sustainability?

Over the past ten years there has been a tendency to focus on the Resource Management Act as the key (only) tool for implementing sustainable development in New Zealand. Some see this as an impediment because it was not designed to promote sustainable development. Others see the process of implementing the RMA as providing a necessary learning curve, sensitising people to sustainability concepts and thus providing a platform from which we can now broaden out into implementing sustainable development.

As discussed in appendix 2 (section A2.2.1), for a variety of reasons the RMA has not lived up to its potential to contribute to sustainable development in New Zealand. In part, this has been caused by the structure and scope of the RMA itself and in part by how it has been implemented.

There have been difficulties with the interpretation of the key sections and terms of the RMA (PCE, 2001b; Ericksen et al, 2001). The purpose of the RMA (set out in section 5 of the Act), sustainable management, was deliberately more narrowly defined than sustainable development. In theory at least, the pursuit of economic and social goals is left to other mechanisms such as the taxation and welfare systems (MFE, 1997), while the RMA focuses on biophysical environmental management. This distinction reflects the historical context of the time (Young, 2001). Resource management law reform was taking place at the same time as Government embarked on a radical reform agenda centred on a neoliberal and efficiency agenda during the late 1980s and early 1990s. At the same time, a global debate was going on around sustainability and environmental protection. The RMA tends to reflect a compromise between the various perspectives.

The divergent agendas and values have carried through into the implementation of the RMA (Perkins and Thorns, 2001). The tensions between attempts to establish environmental controls and to liberalise economic decision making continue to play out within the context of RMA plan making and consent administration. It is arguable that in the early years of the implementation of the RMA, the Minister for the Environment sought to encourage an interpretation of the RMA primarily based on prescribing environmental bottom lines. By focusing on 'effects' rather than prescriptions, and adopting an environmental bottom line approach, it was intended that precise environmental standards should be developed and adopted. Once such standards were developed, market forces could be left to create the most efficient use of the resources available. There seems to have been an expectation that environmental standards could be developed separately from political and value considerations (Perkins and Thorns, 2001). Experience suggests this is not the case. However, this particular interpretation may well have had a significant impact on the first generation of plans prepared under the RMA.

In contrast to this interpretation of the RMA, the Environment Court (the principal decision maker on what the Act means) approach has evolved from the environmental bottom line approach to favouring an 'overall broad judgment' approach (Skelton and Memon, 2002). This seems to be a 'weighing' approach which does not necessarily give primacy to any element of section 5 and may incorporate social and economic concerns depending on the facts of the case. The debate over the meaning of sustainable management and how congruent it is with sustainable development therefore continues.

The debate about the meaning of other sections of the Act continues as well, particularly matters of national importance (section 6 of the Act). Sections of the community are resistant to the more protection oriented parts of the Act, arguing their property rights are unreasonably curtailed. This suggests that the community as a whole has not yet bought into the vision, values and kaupapa expressed in the RMA. As Frieder suggests, New Zealanders have "an unusual cultural relationship with change that permits macro changes while it resists micro changes" (Frieder, 1997:53). The law may have changed but many people do not want to change their behaviour or their values.

In the meantime, relatively narrow interpretations of the scope of the RMA have resulted in a separation of social and economic planning from environmental planning in many local authorities. The broader economic and social policy debates are taking place in the context of more general strategic discussions about council

strategic plans, long-term financial strategies and annual plans rather than within RMA district planning discussions. Economic and social policy, in this context, is subject to political values and decision making, depending upon whether it is seen as a core business of local government. While most local authorities are involved in economic growth promotion, there is no consensus among them on the need for social policy (Perkins and Thorns, 2001). However, it could be expected that the Local Government Bill, if enacted in its current form, will assist in promoting sustainable development given that its purpose is to "enable local authorities to play a broad role in promoting the sustainable social, economic, environmental, and cultural well-being of their communities". Integration continues to be a challenge.

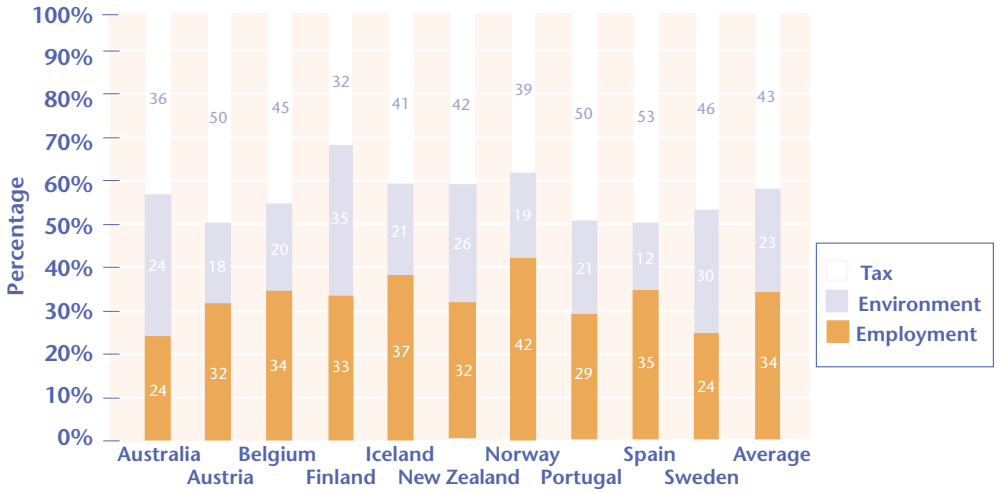
In addition to the ongoing debate over meaning, there are a number of issues which the RMA and its subsequent implementation does not effectively address:

- resource use efficiency issues (PCE, 1998e; PCE, 1998a)
- urban planning (Perkins and Thorns, 2001)
- cumulative effects of land use activities (PCE, 2001d).

In practice, there has been a failure to sufficiently invest in implementation, particularly during the early years following enactment of the RMA. There has largely been insufficient national guidance in the form of national policy statements and national environmental standards. The focus has been on process, legal requirements and compliance costs at the expense of environmental outcomes (PCE, 2001d). The Ministerial Panel on Business Compliance Costs, appointed in December 2000 as part of a wider strategy to reduce compliance costs, has most recently looked at RMA processes, legal requirements and compliance costs from the perspective of business. The panel found that many of the problems business experience with the RMA appear to be caused by the way councils, resource users and applicants operate, rather than by the law itself and requested that Government support approaches to reducing compliance costs and process delays.

The Government has subsequently approved a policy package addressing these issues (Ministry for Economic Development, 2001b). However, it is interesting to note that a recent OECD report indicates that New Zealand's environmental regulatory costs are only slightly above the average at 26% of total regulatory costs compared to the average of 23% (see figure 4.1 below) (OECD, 2001f). In summary, the Act has been the focus of such intense debate that some sections of the community seem to have an entirely negative view of it.

Figure 4.1: Distribution of Compliance Costs for Businesses in OECD Countries



Source: OECD (2001f)

Perhaps of most concern is the fact that we do not know what difference the Act has made in terms of environmental outcomes in the ten years of its existence. Most of the implementation resources have gone into writing plans and developing an understanding of what the Act means, and little work has been done on assessing outcomes.

In the broader context of implementing sustainable development, it is arguable that a consequence of the focus on the RMA over the last ten years has been the lack of use of other tools. In particular, economic instruments such as incentives, funds and green taxes have been developed and used successfully overseas but not in New Zealand (see section 3.2.2 environmental taxes).

Despite the issues to do with mandate and implementation, the RMA has moved New Zealand forward. From being in a situation where its environmental management approach was poorly defined, its governmental agencies lacked environmental policy coordination, and effective citizen participation in policy formation was virtually absent (Sumits and Morrison, 2001), it is now in a situation where the need for environmental management is a mainstream concept. From this perspective, the RMA has served as a valuable consciousness-raising tool for issues around the sustainability of natural resource use. It has also highlighted the variety of views and values held by New Zealanders and the complexity of the issues involved in sustainability even if it has primarily been from an environmental management perspective.

Is the RMA an asset, an impediment or a necessary learning curve? Certainly, it has been and continues to be a learning curve. But is it an asset or an impediment? The answer is surely dependent on knowing whether it has promoted the sustainable management of the natural and physical environment. In the absence of any comprehensive outcome evaluation of the Act so far, this remains to be objectively determined.

4.1.2 Sustainable development in central government policies

The direction that sustainable development takes within New Zealand is influenced to a large extent by Government policies and strategies. The Government has introduced, or has under consideration, a number of strategies and legislation (see figures 4.2 and 4.3) that contribute in some way to aspects of sustainable development. The Government's intention is to draw all these together under an overarching sustainable development strategy. In some cases the links between the individual strategies and sustainable development are not clear because they were not developed with sustainability in mind (see figure 4.4). It would have been more logical to have in place a sustainable development strategy before all other related strategies were considered, so that the links and direction were clear. Nevertheless the production of a series of strategies in the last two years shows great promise for the implementation of sustainable development in New Zealand.

Figure 4.2: Timeline of Strategies and Programmes Related to Agenda 21

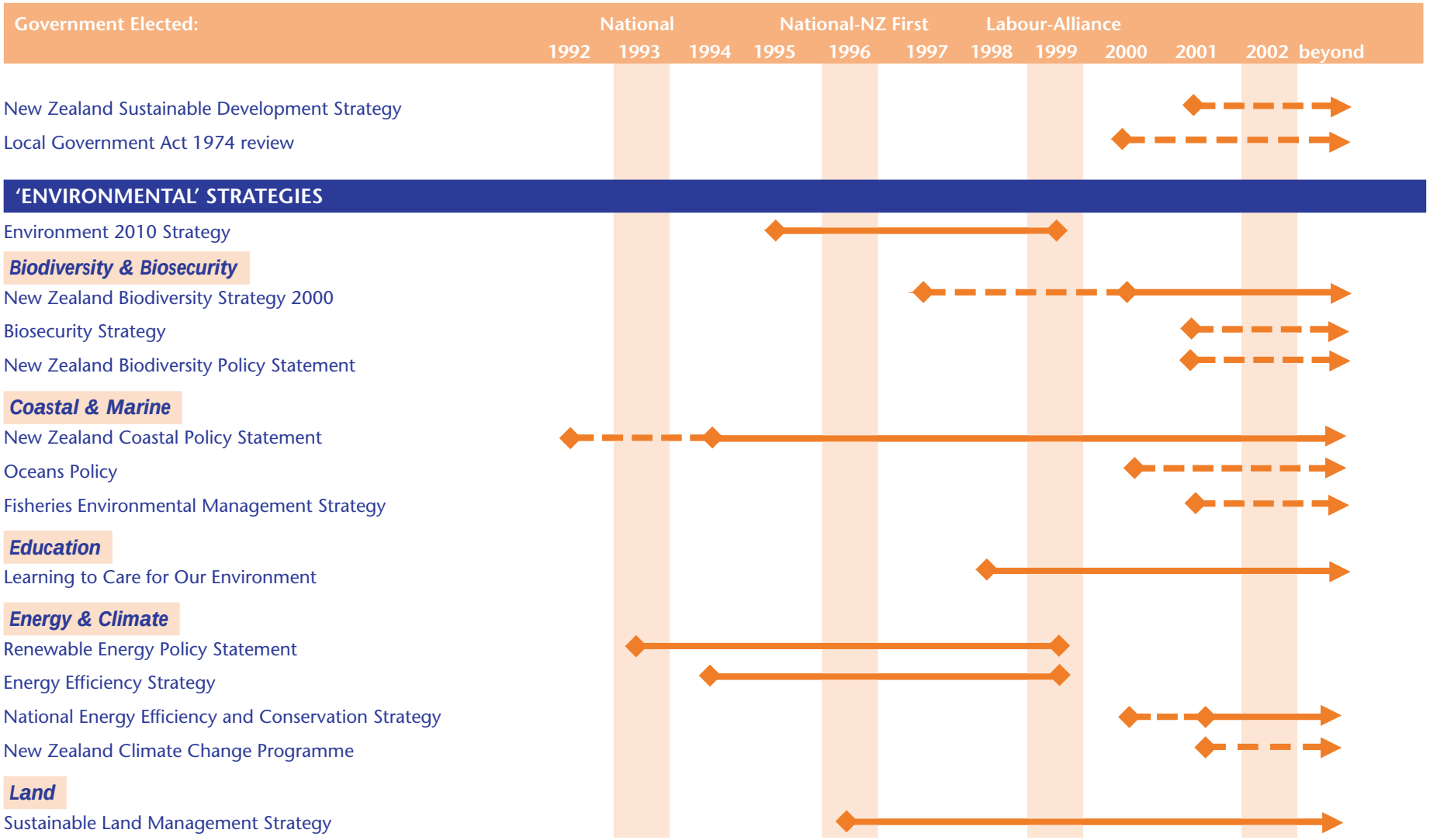


Figure 4.2: Timeline of Strategies and Programmes Related to Agenda 21 *continued*

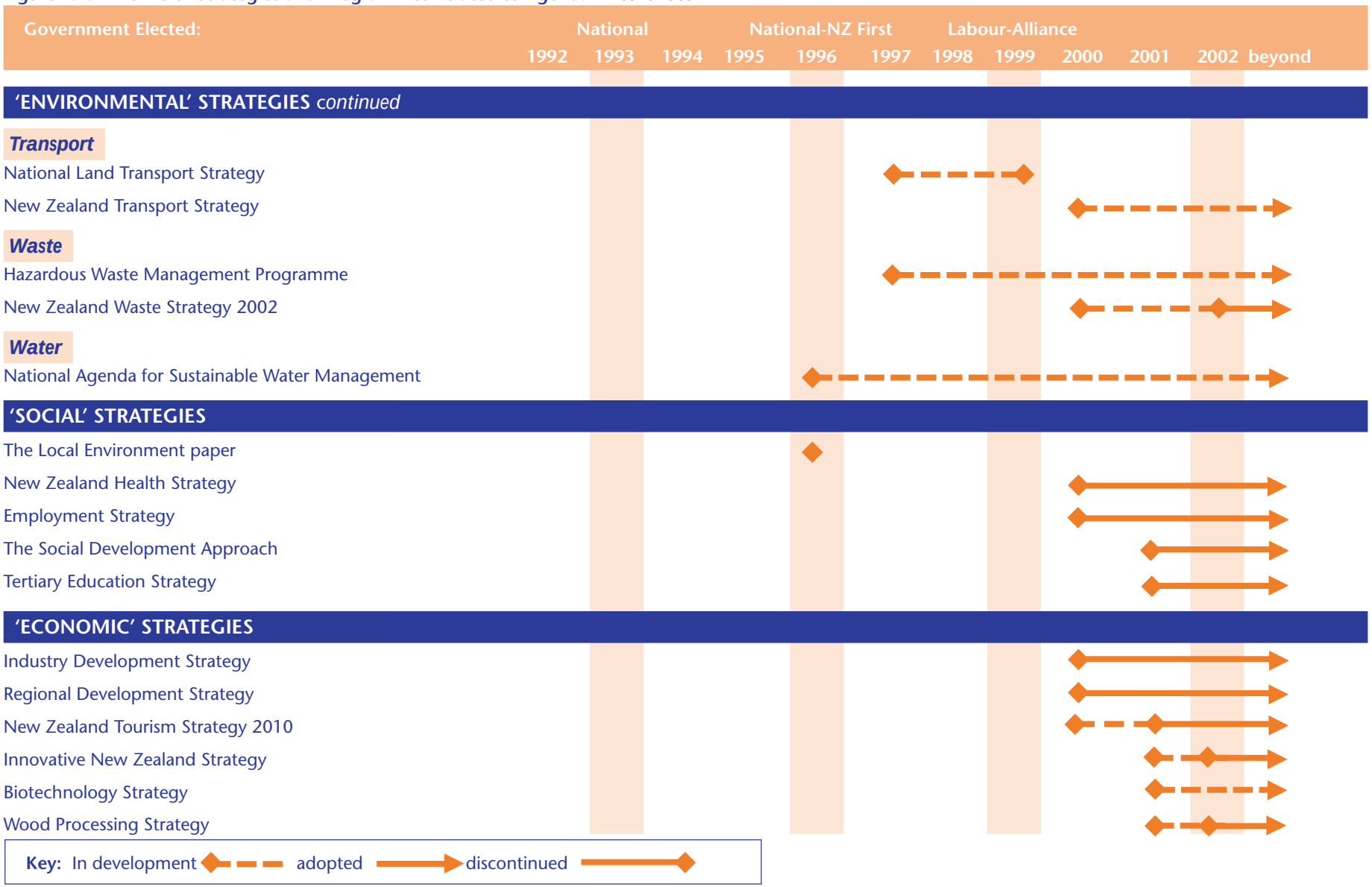


Figure 4.3: Environmental Management Legislation and Strategies 1990-2002

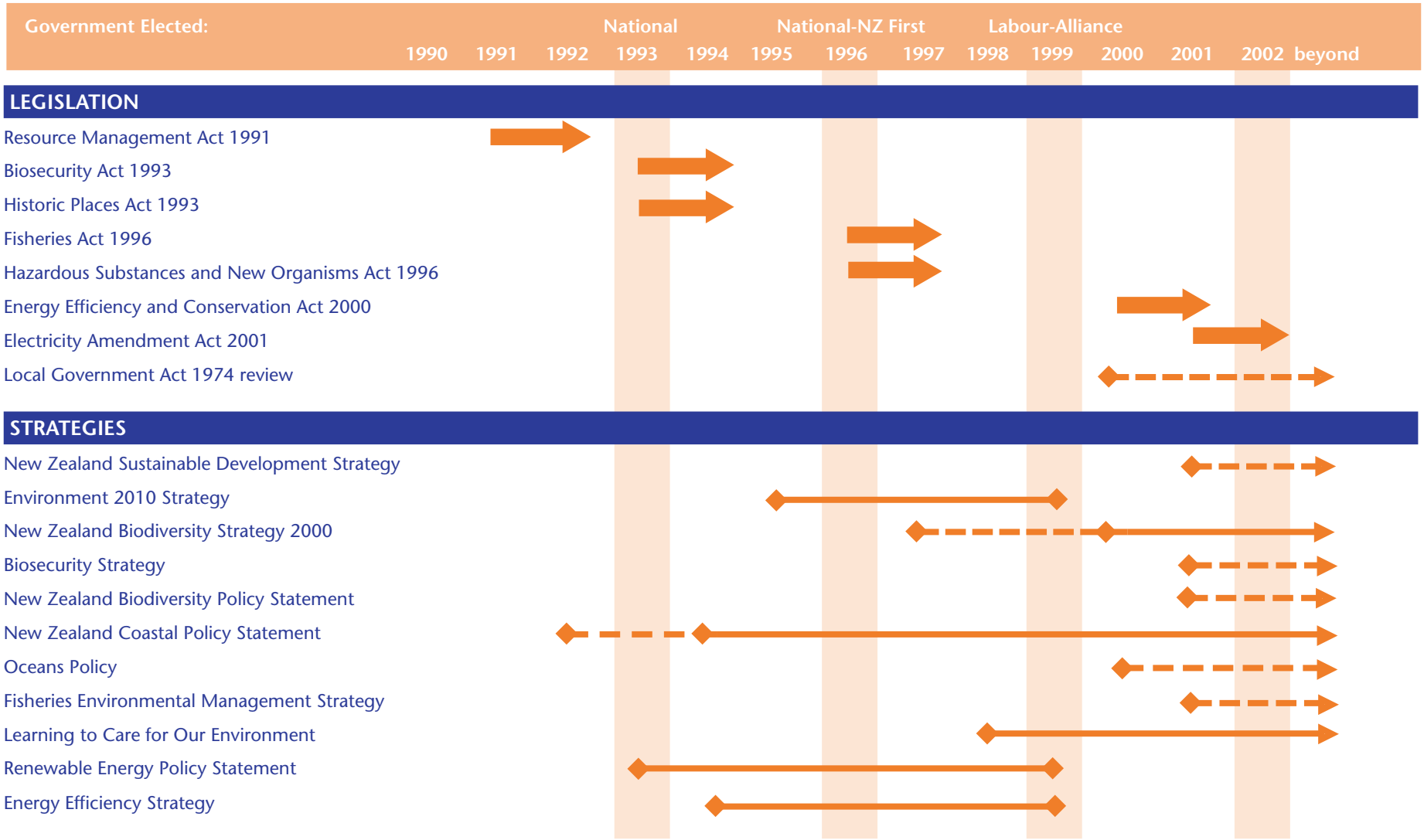


Figure 4.3: Environmental Management Legislation and Strategies 1990-2002 *continued*

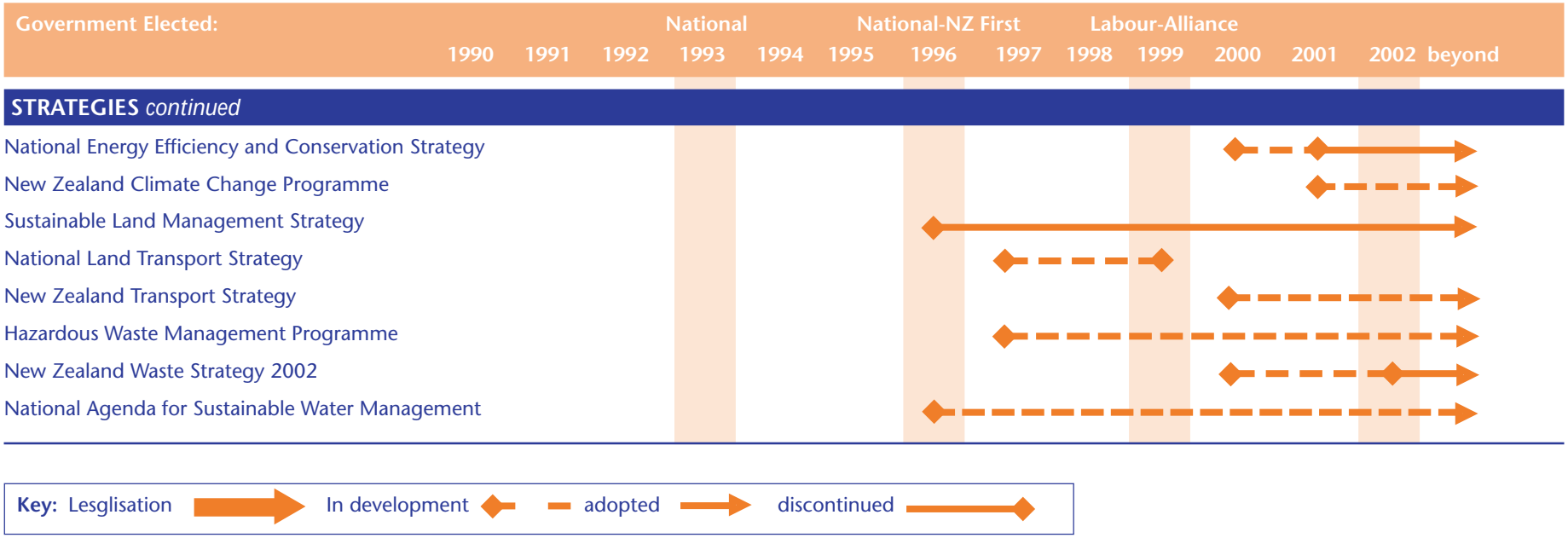
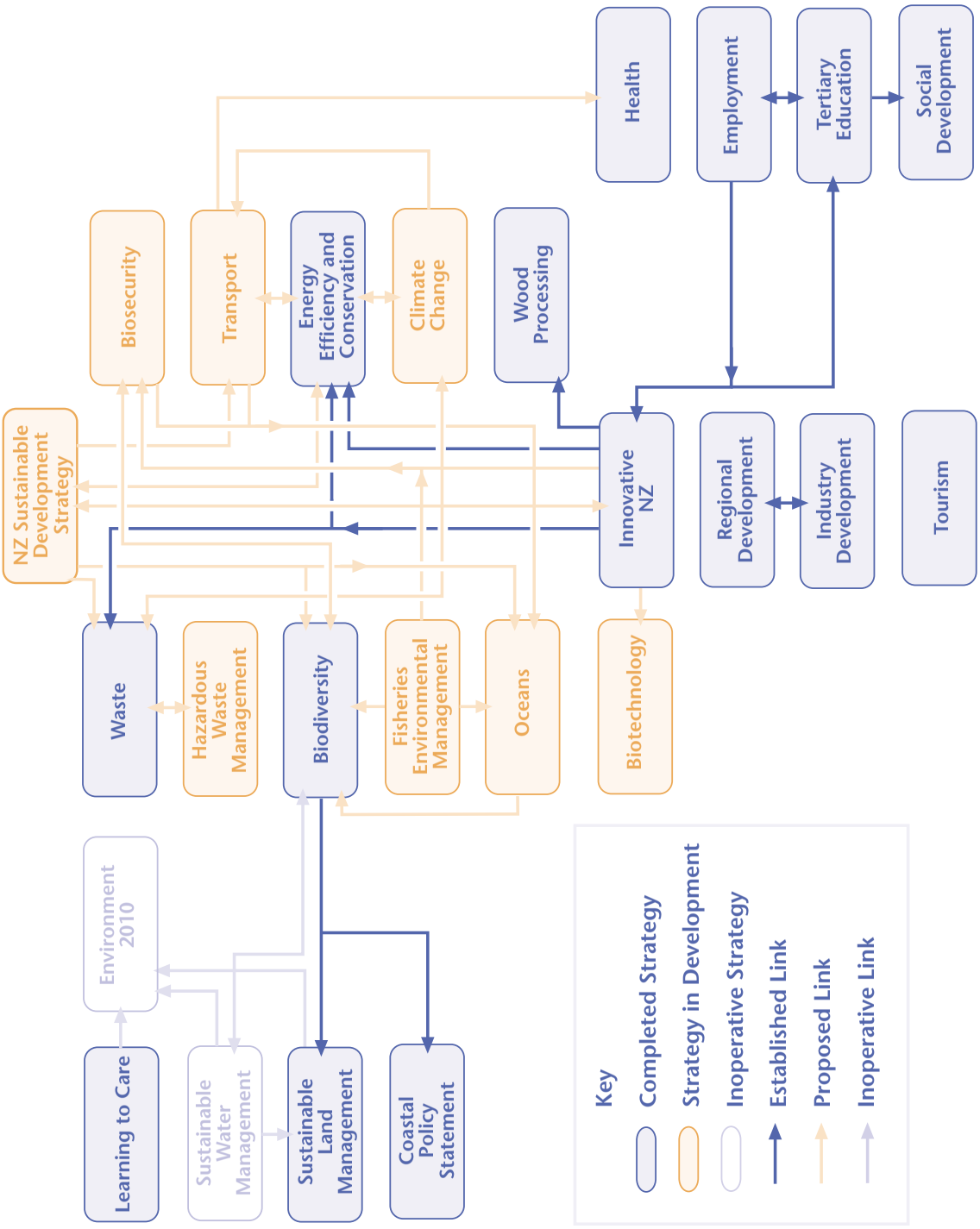


Figure 4.4: Linkages Between Government Strategies



A paper has been prepared, as background to this report[1], which outlines a range of government strategies that have been developed, or are under development, that are related to sustainable development but that have not necessarily been prepared with this in mind. These strategies are summarised in terms of:

- their purpose or goals
- their relevance to Agenda 21 principles and sustainable development
- targets set
- the agencies responsible for implementing and monitoring the strategies
- the extent to which they have been implemented
- any linkages between the strategies.

Table 4.2 provides a summary of the more detailed information presented in the background paper.

It is clear from this table and figures 4.2, 4.3 and 4.4 that:

- Most of the strategy development activity has occurred since 1999.
- Some strategies have become obsolete due to the lack of any follow-up action plan, or have been merged into other strategies.
- Strategy development does not appear to have followed any over-arching sustainable development goal or plan.
- The linkages between the strategies are haphazard and in many cases linkages that should exist, for sustainable development purposes, have not been made.

The apparent lack of coordination among the various strategies is perhaps indicative of the lack of an overall vision and of the silo-thinking that can occur among government agencies that have not necessarily attempted to integrate their strategies with those of other agencies.

4.1.3 New Zealand Strategy on Sustainable Development

Agenda 21 (Chapter 8 - Integrating Environment and Development in Decision Making) encourages governments to integrate environment and development at the policy, planning and management levels. The overall objective is to improve or restructure the decision-making process so that consideration of socio-economic and environmental issues are fully integrated and a broader range of public participation assured.

Prior to 2000 the efforts of successive New Zealand governments to meet Agenda 21 commitments and promote sustainable development have been weak. As discussed in section 4.1.2, the introduction of legislation, strategies and policies related to sustainable development has been slow and largely uncoordinated.

A paper dated 15 May 2000 from the Minister for Economic Development to the Cabinet Committee on Economic Development mentioned that the concept of sustainable development is "consistent with the government's goals to grow an inclusive, innovative economy for the benefit of all; improve New Zealander's skills, ... health, education, employment; and protect and enhance the environment." In a subsequent press release on 14 June 2000 the Minister announced the release of the Government's new economic and regional development strategies that were to be based on the concept of sustainable development - considered to be a major shift in Government policy away from a narrow focus on short-term economic gain.

It was not until August 2001 that the Prime Minister announced the Government was working on a sustainable development strategy for New Zealand.[2] In her statement the Prime Minister said that Cabinet had agreed the principles of sustainable development should underpin all of the Government's economic, social and environmental policies.

Table 4.2 Summary of Strategies Related to Sustainable Development

Strategy/ Programme	Status	Refers to SD	Relevance	Targets	Strategy Linkages
NZ Sustainable Development Strategy (SDS)	✳	✓	Intends to underpin all environmental, social and economic policies. Draft principles have been set to take account of full environmental, social, cultural and economic opportunities and consequences in making decisions affecting the well-being of current and future generations.	?	(Local Government Bill, Waste, NEECS, Biodiversity, Oceans, Transport)
Local Government Bill	✳	(✓)	Recognises the key role of local government to pursue sustainable devleopment.	n/a	n/a
Environment 2010 Strategy	✘	✓	The first attempt to take a strategic approach to environmental issues, based on sustainability principles.	Broad	–
NZ Biodiversity Strategy	✓	✘	Focuses on conservation and sustainable use of biodiversity.	Broad	SustainableLand Mgmt, NZ Coastal Policy, NASWM
Biosecurity Strategy	✳	(✘)	Intends to protect environmental, social and economic interests by improving biosecurity management.	?	(Biodiversity, Oceans)
NZ Coastal Policy Statement	✓	✘	Promotes sustainable management of the coastal environment.	Very broad	-
Oceans Policy	✳	(✓)	Intends to manage the impacts of human behaviour on the marine environment.	?	(Biodiversity)
Fisheries Environmental Management Strategy	✳	(✘)	Intends to manage the effects of fishing on the marine environment. Linked to the Ministry of Fisheries strategic intent to achieve sustainable fisheries in a healthy aquatic ecosystem.	?	(Biodiversity, Biosecurity, Oceans)
Learning to Care for Our Environment	✓	✓	Notes the role of education to achieve local implementation of Agenda 21.	Broad	Environment 2010
National Energy Efficiency & Conservation Strategy (NEECS)	✓	✓	Designed to improve the environmental, social and economic sustainability of energy systems.	Specific	Climate Change, Waste, Transport, SDS
NZ Climate Change Programme	✳	(✓)	Focusing on the environmental, social, cultural and economic impacts of a climate change response.	?	(NEECS, Waste, Transport)
Sustainable Land Management Strategy	✓	✘	Highlights land management problems affected by the narrow pursuit of economic and social goals.	Very broad	Environment 2010
National Land Transport Strategy	✘	✘	Notes the need to consider sustainable management of environmental effects relating to land transport.	None	–

Table 4.2 Summary of Strategies Related to Sustainable Development *continued*

Strategy/ Programme	Status	Refers to SD	Relevance	Targets	Strategy Linkages
NZ Transport Strategy	⁕	(✓)	Intends to integrate environmental, social, cultural and economic goals of the transport sector.	?	(SDS, NEECS, Oceans, Health)
Hazardous Waste Management Programme	⁕	✘	Hazardous waste management has major implications for environment, social, cultural and economic wellbeing in NZ.	Specific	Waste
NZ Waste Strategy	✓	✓	Wastes can represent significant risks to human health and the environment and represent an inefficient use of resources.	Specific	NEECS, Hazardous Waste Management, Climate Change
National Agenda for Sustainable Water Management (NASWM)	✘	✘	Was designed to set priorities for managing water in a sustainable manner.	None	Sustainable Land Management, Biodiversity, Environment 2010
The Local Environment	✘	✓	Highlights links between a healthy environment and a healthy population.	None	–
NZ Health Strategy	✓	✘	Notes the need to ensure that a healthy environment is achieved.	None	Disabilities, Child Health, Mental Health, Primary Health
Employment Strategy	✓	✘	Promotes employment opportunities but does not consider environmental issues associated with attempts to promote "sustained economic growth".	Broad	Tertiary Education, Adult Literacy, Disabilities, Early Childhood Education
The Social Development Approach	✓	✘	Promotes cross-sectoral social policies. A desired outcome is to sustain a clean and healthy environment. It does not make any specific linkages.	None	–
Tertiary Education Strategy 2002-07	✓	✓	Connects learning and research with economic and social development goals. Makes some reference to environmental sustainability	Broad	Employment, Social Development, Innovative NZ
Industry Development Strategy	✓	✓	Suggests that industry development is a key component of SD.	None	Regional Development
Regional Development Strategy	✓	✓	Suggests that regional development is about applying SD on a regional scale.	None	Industry Development
NZ Tourism Strategy 2010	✓	✘	Notes the significant role tourism plays in the NZ economy. Highlights environmental and cultural aspects of sustainability.	Very broad	–

Table 4.2 Summary of Strategies Related to Sustainable Development *continued*

Strategy/ Programme	Status	Refers to SD	Relevance	Targets	Strategy Linkages
Innovative NZ Strategy	✓	✓	Designed to foster economic growth. Notes the need to consider social and environmental factors but suggests that NZ's "economic performance has not kept pace with our social and environmental performance" in the past.	None	SDS, NEECS, Waste, Biosecurity, Tertiary Education, Wood Processing, Biotechnology
Biotechnology Strategy	❋	?	Intends to balance the risks and benefits of biotechnology in NZ.	?	(–)
Wood Processing Strategy	✓	✘	Designed to accelerate the development of wood processing industries. Likely to have a significant environmental, social and economic impact.	Specific	–

KEY
❋ In development
✓ Implemented/Makes explicit reference to SD
✘ Inoperative/Makes no explicit reference to SD
( ) To be confirmed (still under development)
? To be confirmed (still under development)

Elements of the strategy were to include, among other things:

- a framework for implementing the strategy
- a programme to measure progress towards sustainable development goals
- sustainable development indicators to convey information about progress
- trialling and testing Triple Bottom Line Reporting within Government
- a stocktake of New Zealand's performance with regard to Agenda 21
- initiatives already underway including the development of waste, energy, biodiversity and oceans strategies.

The Government outlined that its commitment to sustainable development, through some key projects and a long-term strategy, was to achieve better results in terms of New Zealand's overall economic, environmental and social well-being. Included in the range of projects was the sharing of information on sustainable development in all sectors and the development of goals and principles to guide government departments in implementing sustainable development.

In February 2002, the Government published a report setting out its framework for growth and innovation (New Zealand Government, 2002). This report focused primarily on the Government's economic objective ("to return New Zealand's per capita income to the top half of the OECD rankings and maintain that standing"), but acknowledged the concept of sustainable development in linking economic policy to social and environmental policy objectives:

> *...this government does not believe we can put on hold social and environmental progress, and concentrate solely on economic growth. Implicit in the quality of the growth we are seeking will be integration of the economic, environmental and social pillars of sustainable development. Sustaining a high quality environment, managing the risks to it and implementing efficient resource use policies underpin our competitive advantages as a nation. Managing the environmental pressures from economic growth, while continuing to satisfy human needs will require an integrated effort. (Ibid:12).*

Not only will social and environmental policy continue to be given high priority in their own right, but the choice of economic policy instruments will be influenced by their interaction with social and environmental factors. Sustainability will be paramount (Ibid;12).

Using sustainable development as a filter for policy means that economic policy is not approached in isolation but as part of a bigger picture... Work continues on developing social and environmental indicators to go alongside traditional economic indicators to measure the overall progress we are making (Ibid: 23).

In May 2002, the Minister for the Environment submitted a paper to the Cabinet Policy Committee outlining the proposals for developing New Zealand's sustainable development strategy. This included a set of draft principles to articulate the Government's approach to sustainable development:

We will take account of full environmental, social, cultural and economic opportunities and consequences in making decisions affecting the well-being of current and future generations, in the following way:

- *We will seek to understand and consider the positive and negative long term and short-term impacts across social, cultural, environmental and economic spheres in our decision making.*
- *We will actively seek win-win solutions which maximise net benefit for the environment, economy, social and cultural development, such that gains are mutually reinforcing, rather than assuming or accepting that gain in one area is always achieved at the expense of another.*
- *We will seek to minimise costs and maximise benefits across social, economic and environmental spheres, in particular through separating environmental pressure from economic growth.*
- *We will explicitly address risks and uncertainty in assessing solutions and making choices, and we will take a precautionary approach to decisions that* may have irreversible consequences.
- *We will use the best information available to support making the best possible decisions in a timely fashion.*
- *We will look at the implications of our decisions from a global as well as a domestic perspective.*
- *We will seek to ensure that New Zealand's public institutions value and express diversity and uphold freedom, democracy and participation.*
- *We will work in partnership with other sectors in the pursuit of sustainable development.'*

The focus on developing a national strategy on sustainable development is to be applauded. It is encouraging to see the beginnings of a central government position on sustainable development. This is a significant component that has been conspicuously absent since the Earth Summit is 1992.

4.1.4 Indicators

The development of indicators for sustainability is essential to determine the extent to which we are progressing towards sustainability[3].

Patterson (2002) carried out a review of indicators that could be used in New Zealand as headline indicators to measure progress towards sustainability. Table 4.3 is a comparison of indicators across eight evaluation criteria used in that review. None of the indicators assessed were considered solely sufficient to measure even ecological sustainability, let alone the social and economic dimensions of sustainable development. The 'green' GDP and a proposed 'composite index of sustainable development'[4] were considered the ones that most adequately reflected all aspects of sustainable development. The Ecological Footprint and the Human Development Index were rated the highest in terms of practicalities (data availability, cost, long-term data available), but had a number of weaknesses.

Patterson's recommendations for an ecological indicator of sustainability were:

- the Ecological Footprint as an easy-to-implement, short-term indicator

- the development of a composite index of ecological sustainability in the longer term.

Two options were recommended for an indicator that encompassed environmental, social and economic aspects:

- 'green' GDP (operationalised by the Genuine Progress Indicator) or
- a proposed composite index of sustainable development.

Clearly, the choice of an indicator, or use of a small set of indicators, to show how well we are performing is not an easy task. Nonetheless, it is an important responsibility of government to develop useful sustainable development indicators for the country. To date, little work on sustainability indicators has been done in New Zealand, but there are promising signs of activity.

Statistics New Zealand is currently working with other government departments to produce a framework for the selection and presentation of sustainable development indicators for New Zealand, as well as a set of headline indicators.[5] This work is part of a package of proposals that will constitute a national strategy on sustainable development. A first draft of sustainable development indicators for New Zealand is to be produced in July 2002, and public consultation on the indicators will occur between July 2002 and February 2003.

The Ministry for the Environment has been working for some time on a set of Environmental Performance Indicators[6] to measure changes caused by various pressures on the environment, and help guide decisions on managing environmental problems. This set of indicators remains incomplete.

4.1.5 Triple bottom line (TBL) reporting

TBL encompasses the three components of sustainable development - economic, social and environmental. Reporting on an organisation's performance in each of these areas is known as TBL reporting. It enables the performance of an organisation to be assessed not only on its traditional financial achievements, but also on its social and environmental effects.

The Ministry for the Environment received funding in 2000 (through to 2003/04) to encourage and facilitate best practice TBL accounting and reporting in both the public and private sectors.[7]

The key objectives of the Ministry's project within the public sector include:

- increasing participants' understanding of TBL reporting and how it relates to their organisations' responsibilities
- providing a forum for and facilitating a pilot group of government agencies to trial TBL reporting
- documenting the key issues and lessons learnt from the pilot process
- determining the overall value of TBL reporting for government agencies.

This initiative is still at a very early stage and it is too soon to evaluate its effectiveness in relation to sustainable development.

4.1.6 Sustainability research

The Foundation for Research Science & Technology (FRST) funds 'sustainability research' under a number of research portfolios. Currently the sustainability research investments are about $57 million per year. A FRST review between February and October 2002 will largely focus on future directions for this research under two main components. The first component is 'Sustainable Management' and will consider future directions for sustainability research relating to land-based food and fibre sectors and sustainability across all sectors. It will include the Environmental Protection (land, freshwater and estuaries) portfolio. The second component is 'Sustainable Cities and Settlements' and aims to identify and clarify future directions and stimulate new relationships amongst a range of stakeholders.

Table 4.3 Evaluation of Headline Indicators

	Clarity of Message/ Public Acceptance	Scientific & Theoretical Basis	Timeliness	All Dimensions of Sustainable Development	Performance Criteria	Data Availability	Cost	Long-term Series
Ecological Footprint	XXXX	XX	XXX	X	XXX	XXXX	XXXX	XXXX
Material Flows Indicators	X	XX	XX	X	XX	X	X	X
Environmental Sustainability Index	XXX	XX	XXXX	X	XX	XX	XXXX	XXX
Consumption Pressure Index	XXX	X	XXXX	X	XX	XX	XXX	XX
Living Planet Index	XXX	XXX	XX	X	XX	XX	XXXX	X
European Composite Environmental Performance Index	XX	XXX	XXXX	X	XX	X	X	XX
Weak and Strong Sustainability Indicators (including Genuine Savings)	X	XXX	X	XX	XXX	XX	X	XX
'green' GDP (including ISEW and GPI)	XXXX	XXX	XXX	XXXX	XXX	XX	XXX	XX
New Zealand Deprivation Index	XXX	XXXX	XX	XX	XX	XXX	XX	XXX
Human Development Index	XX	XX	XXXX	XXX	XX	XXXX	XXXX	XXXX
Composite Index of Sustainable Development	XXX	XXXX	XX	XXXX	XXX	XXX	XXX	XXX

Source: Patterson, 2002

KEY
Excellent = XXXX
Good = XXX
Fair = XX
Poor = X

4.1.7 Local government initiatives

PRISM and Knight (2000) provide an outline of the adoption of sustainable development and/or Agenda 21 principles by local authorities in New Zealand. This includes details such as:

- Seven territorial authorities have formally adopted Agenda 21: Christchurch, Hamilton, Nelson, Waitakere and Wellington City Councils, and Tasman, Taupo and Waimakariri District Councils.
- 30% of councils either refer to their strategic plans as Agenda 21 documents or refer to Agenda 21 principles and processes in their strategic plans.
- Manukau City is an example of a council that is actively involved in the Healthy Cities programme, that addresses some aspects of sustainability, and has a strong involvement in community and social issues.
- Some councils had not adopted sustainable development principles on the grounds that such issues were regarded as beyond the mandate of the council and that they should keep within their regulatory and statutory functions.
- Waitakere City was held up as a leader in the field of sustainability. The council was quick to adopt Agenda 21 in 1992 and declare itself an 'eco-city'. It has been at the forefront of thinking about sustainable ways to accommodate rapid population growth, and leading regional thinking on this issue. Waitakere City had significant influence on the development of the Auckland Regional Growth Strategy.

The range of activities that councils are involved in are too numerous to outline in detail in this report, but the following examples give some indication of initiatives and achievements undertaken by councils either on their own or in partnership with others:

Christchurch City Council

- the establishment of the Recovered Materials Foundation, a joint initiative with the waste management sector to investigate and create markets for waste products
- participation in the Redesigning Resources and The Natural Step Pathfinders programme

The Christchurch Otautahi Agenda 21 Forum

The Christchurch Otautahi Agenda 21 Forum is a Non Governmental Organisation (NGO) that was established after the Rio Earth Summit in 1992. Their objective is to effect change, in subtle and incremental ways, as part of a social trend towards sustainability in New Zealand. Their members are based in organisations across the NGO sector and in tertiary education institutions.

An early project of the forum was to nurture indigenous biodiversity (one of the major themes of the Earth Summit) in Christchurch. Grants from a local Community Board and the Ministry for the Environment supported a scheme to map the historic soils and natural habitats of the city. These were projected onto a present-day street plan to act as a guide for restoration planting. A biodiversity project worker also promoted native planting projects in schools and public places. Meanwhile, the forum has worked with Christchurch City Council to strengthen its native habitat creation in parks, riversides and reserves.

In recent years the forum has hosted public consultations in Christchurch on biodiversity policies for central government. They have also hosted guest speakers from around New Zealand and overseas and established strong connections with students from Lincoln and Canterbury universities. In addition, they have made many submissions on Christchurch City plans to promote social sustainability and ecologically sustainable development and members have become involved with various committees and working groups.

The forum has approximately 40 members who make financial contributions and it is managed by a committee of eight volunteers. Given that they operate without paid staff, on an annual turnover of less than $1000, the forum believes that it will be difficult to maintain all of their programmes indefinitely. Most of their members have work and family commitments and are involved in volunteer work elsewhere. Nonetheless, they are seeking to maintain and improve their connections and communication skills and to act as a persistent educator and lobbyist in this area.

See Christchurch Otautahi Agenda 21 Forum P.O. Box 2657 Christchurch

The Big Clean Up

The Auckland Regional Council is trying to involve Aucklanders in a scheme to clean up and improve the state of their local environment. The Big Clean Up project has been developed as a response to increasing pollution and waste problems in the Auckland region.

The project is based on a ten point plan to:

1. encourage people to enjoy and explore the natural environment in the Auckland area
2. promote the need for regular maintenance of their cars to reduce harmful vehicle emissions
3. discourage people from burning rubbish and garden waste to reduce the volume of pollutants in the air
4. help people reduce their consumption by reducing and recycling their waste
5. educate and discourage people from contributing pollutants into stormwater systems
6. promote the planting of indigenous plants in people's gardens
7. encourage people to use their cars less often and to adopt more sustainable modes of transportation
8. support people in their preparations for disasters and emergencies
9. promote the importance of saving water and power
10. encourage people to become more involved with council planning activities and community groups.

THE BIG CLEAN UP. 0800 JOIN IN.

Auckland Regional Council TE RAUHITANGA TAIAO

Ministry for the Environment Manatū Mo Te Taiao

A key component of the project is the use of a questionnaire. Based on their responses to this survey, participants are sent a personalised plan to show how they could help make Auckland a cleaner place to live. Participants are also sent a set of vouchers for discounts on native plants, 'environmentally friendly' products and other goods and services.

This scheme is also linked with educational resources provided to teachers in the area. The Auckland Regional Council is trying to involve as many people as they can in the project, based on their desire to make it as easy as possible for people to work towards a better environment. By May 2002, over 27,000 people had joined them in their efforts to help the Big Clean Up.

See http://www.arc.govt.nz

- employing a member of staff with responsibility for advising the council on sustainability issues and coordinating the council's progress towards being a sustainable city
- adopting Triple Bottom Line Reporting format in the council's next (2002/03) annual plan.

Waitakere City Council

- soon after adopting Agenda 21 in 1992, the council produced its strategic plan or 'Greenprint', combining social, environmental and economic goals and objectives
- a strong emphasis on community involvement in seeking solutions to socio-economic issues, managing urban growth, waste and other sustainability issues
- applying 'soft' engineering solutions to tackling stormwater issues (e.g. using natural vegetation rather than more expensive pipeworks to dispose of stormwater)
- producing a bi-annual well-being report assessing quality of life for Waitakere residents.

Manukau City Council

In consultation with a wide range of stakeholders within the community, the council published a report (Manukau City Council, 2001) outlining a vision for the city to 2010. It includes a section on 'Sustainable Manukau' which sets out long-term goals and targets, the actions necessary to achieve those goals and targets, and identifies the agencies that will be responsible for leading those actions. Action leaders include local and central government agencies and private businesses. The challenge will be to maintain the alliances needed to achieve long-term goals.

Quality of life in New Zealand's six largest cities

In 1999, the Auckland, Christchurch, Manukau, North Shore, Waitakere and Wellington city councils undertook a joint study to establish indicators of social well-being in these cities. They accommodate around 40% of New Zealand's population. The project grew to include economic and environmental indicators to enable

monitoring of whole quality of life. This resulted in the publication of a report (Auckland City Council, et al., 2001). It concluded that the quality of life in New Zealand's six largest cities is affected by many inter-linked factors. To achieve quality of life and ensure sustainable development in urban environments, the report pointed out that a wide range of social, economic and environmental issues (e.g. population growth and socio-demographic factors, housing issues, health status, educational achievement, and pollution control) must be considered alongside each other, rather than as separate matters to be dealt with in an isolated fashion. This will require key sectors working together in new forms of partnerships.

Among other things the report identified as the next steps, the need to work with central government on some of the issues of concern to the six cities. It also recommended that measuring quality of life should become a regular exercise contributing to the development of more effective partnerships.

Local Government New Zealand (LGNZ) initiative

LGNZ established a Sustainable Development Project Team in late 2001 to support and help build capacity in local government to engage in sustainable development. It also assists LGNZ provide advice and input to the Government's sustainable development initiatives. Part of the LGNZ programme includes preparing a local government 'statement on sustainable development'. The team's tasks to help build capacity include:

- input to the implementation programme for the new Local Government Act
- work on a best practice toolkit for sustainable development
- a local government sector strategy for sustainable development
- establishing networks to share ideas on sustainable development among local authorities.

4.1.8 Other initiatives

Throughout this report there are examples of sustainable development initiatives undertaken by business, iwi and community groups.[8] They provide a useful indication of the variety of initiatives that are occurring around the country, and the types of changes that are being sought or achieved through putting into practice the principles behind sustainable development. The examples cover:

- local community-based initiatives (Agenda 21 Forum in Christchurch)
- nationwide community projects (Zero Waste)
- development based on ecological principles (Earthsong housing development and the 'eco-hospital' projects in Waitakere City)
- a business initiative (Macpac and 'The Natural Step')
- triple Bottom Line reporting (Landcare Research)
- an iwi initiative (Ngai Tahu's 'mountains to the sea' approach to managing catchments)
- application of Natural Capitalism (Redesigning Resources programme in Christchurch)
- socially and environmentally responsible investment (the Global Responsibility Investment Fund)
- public involvement in improving local environmental quality (Auckland Regional Council's 'Big Clean Up' project)
- international moves towards sustainable energy (Green Energy purchasing initiatives).

Goldberg (2001) produced a comprehensive list of about 120 current activities that support environmentally sustainable business initiatives. It covers local government, the private sector (including business, environmental consultancies, industry associations) and NGOs. The list includes activities such as:

- support for eco-business (eg eco-tourism)
- eco-labelling initiatives
- quality assurance and certification programmes that include environmental sustainability

- programmes to support waste minimisation and eco-efficiency.

About half of the activities on the list are in the category of 'information dissemination and exchange', and around 20% are categorised as 'promotion of environmental management systems'. District and city councils are responsible for about 26% of the activities listed in the database, followed by community associations (24%) and industry associations (19%). Central government only make up about 3% of activities.

4.2 International initiatives

4.2.1 Questions of governance

This section looks briefly at the initiatives some other countries have taken with respect to sustainable development. A particular issue it examines is the question of 'governance' - the systems and structures of government - since these have a central role in shaping the relationships between the public and government as well as relationships between different parts of government. The material draws on a recent OECD report (OECD, 2002) that studied governance for sustainability in five OECD countries - Canada, the United Kingdom, Japan, Germany and the Netherlands.

The OECD report recognised that sustainable development is typically a 'cross-cutting issue' requiring consideration of economic, environmental and social aspects before making decisions. The report identified this as a challenge for policy integration, especially when the evolution of modern states "...has been towards an increasing degree of sectoral specialisation, in order to respond more effectively to complex and differentiated problems." Countries have tended to respond to this challenge by either building new institutional frameworks, or by using their existing practices for policy development and decision making to address sustainable development goals. Either option presents significant challenges for policy integration.

Green Energy Purchasing Initiatives

A growing number of public agencies overseas are agreeing to purchase more of their energy from renewable sources. They are also being joined by many individuals and businesses who want to ensure that their energy demands are met in a sustainable way. For example:

- In the United States, the city of Chicago and 48 government agencies signed a contract in June 2001 to purchase 10% of their electricity from renewable sources. This figure is due to increase to 20% in 2007. Meanwhile, the city of Salem began to source all of its energy from wind and hydro sources in 1996.
- In the United Kingdom, several universities have signed agreements to buy between 30% and 40% of their energy from 'green' power sources.
- In the Netherlands, 5% of the population has signed agreements with suppliers to receive all of their energy from renewable sources.
- In Germany, many large corporations are buying all of their energy from sustainable sources.
- In Australia, 60,000 residential customers and 2,5000 commercial enterprises derive their energy from renewable supplies.

Public policy interventions have been integral to the success of many of these programmes. Such policies can be used to make 'green' energy more cost-effective when compared to more conventional energy supplies. Thus, energy supplied from renewable sources in the United Kingdom is exempt from a climate change levy enacted in April 2001. Likewise, green energy is exempt from energy taxes in the Netherlands and Germany.

Meanwhile, in the United States, there has been more emphasis placed on education in this area. Many consumers are also given the option to pay a premium on their electricity prices which supports the construction of new renewable energy supplies. In states such as Colorado, this demand is fuelling investments in wind farms as a new source of energy.

These approaches highlight some of the ways in which countries are attempting to pursue a more sustainable energy future. In addition, green energy purchasing plans are being supplemented with energy efficiency and conservation initiatives to reduce the demand for energy. New energy developments are also being carefully managed so that their environmental impacts can be minimised. See http://www.earth-policy.org

The OECD report suggested that choosing a 'comprehensive' approach, as did Canada and the United Kingdom, requires a country to have the capacity to spread a coherent message to all public agencies and to ensure that they respond appropriately. Using the existing practices and structures to promote sustainable development also implies an oversight capacity through effective steering mechanisms. The risk is that, if it is not well managed, unfocused efforts lead to ineffective actions and a culture of 'talking rather than acting'.

The usual alternative, to set up new institutions to foster integration, can lead to resistance to such agencies from established departments, which see the 'newcomers' as 'overstepping their boundaries'. In Germany and the Netherlands concrete achievements have come from an approach that focused on environmentally sustainable economic development. This has been supported by a clear distribution of responsibilities as well as clear enforcement responsibilities in the environment ministries. One outcome has been the creation of a sense of leadership. Paradoxically, however, through the strong linkages of the notion of 'sustainability' with environmental matters it has made it more difficult for the notion of 'sustainable development' to be extended and linked to social and economic influences on development.

Accountability Mechanisms for Governments

Canada has developed comprehensive evaluation and accountability mechanisms for sustainable development. In 1995, amendments to the Auditor General Act created the position of Commissioner of the Environment and Sustainable Development,[9] appointed by, and reporting to the Auditor General. The Commissioner's mandate is to make the Government accountable for greening its policies, operations and programmes. One of the Commissioner's main functions is to monitor and report on federal progress in implementing sustainable development strategies. The same 1995 amendments require 28 government departments and agencies to draw up sustainable development strategies. These strategies are to be updated every three years and are evaluated by the Commissioner who reports annually to Parliament. (OECD 2002).

The OECD report also identified an issue that was mentioned by many of the people interviewed for this report. Namely, new challenges that have a high level of complexity often require making choices for the longer term, along with a capacity to sustain commitments over time. Public sector institutions have difficulties with long-term time frames since the frequency of electoral cycles provides a strong incentive to focus on short-term issues. The OECD report was referring to electoral cycles of 'about 5 years'.

The common problems across the countries surveyed were:

- the difficulties of integrating policies across government (the need for horizontal (within central government) and vertical (central to local government) integration)
- the importance of improving interactions between government and society
- the need to create a long-term view within governments to respond to inter-generational issues.

4.2.2 The Dutch Experience

> *Trust and honesty are the glue that holds together Dutch environmental policy [reflecting] a conscious choice... that government, business and environmentalists need to stand shoulder to shoulder on progressive environmental management.* Dagmar Timmer, Resource Renewal Institute 1998.

A densely populated country with four times the population of New Zealand, but only 15% of its land area, the Netherlands has devoted considerable time, energy and intellect to working out how to better manage its environment and economy. The outcome has been instructive to many other countries who see the 'Dutch experience' as providing useful, workable models for bringing together government, business, citizens and activists to work out long-term deals aimed at achieving sustainable development. The process has been an evolutionary one, as opposed

to revolutionary change. Central to that evolution has been the extension of lessons learned during the development of the Dutch National Environmental Policy Plan (NEPP) to broader national debates on sustainable development issues (de Jongh and Captain, 1999).

De Jongh and Captain (1999) identify five key elements of cooperative environmental management that are also applied to sustainable development initiatives. They are:

- Integrate environmental responsibilities into society as a whole.
- Provide clear information, backed by science.
- Recognise policy as a process with many different actors playing critical roles.
- Frame the debate in terms acceptable to all participants.
- Work for long-term continuity in policies.

Over the last decade the attitude of the public in the Netherlands towards the environment has moved from 'protecting nature' to 'caring for tomorrow'. This moves it closer to the concept of sustainable development. "As in other OECD countries, there is no ministry in charge of sustainable development; nor is this wished." (OECD, 2002). Instead, the 13 equally-ranked Ministries in the Netherlands Government have a number of environment-related functions allocated between several of them.

It was notable failures of the regulation-led, compliance approach that led the Netherlands to try new instruments for developing environmental policy. Since the early 1990s, the focus of decision making has been on developing shared visions and mechanisms for cooperative implementation. The development of the covenant system, i.e. negotiated agreements, has become a central policy tool of new cooperative management practices. They are the key elements for the implementation of the NEPPs for the private sector. Defined by legislation and Cabinet regulations, covenants can be negotiated on an industry-wide, a sector-specific, or a plant-specific basis. Hence they can involve either central or local government.

Covenants reflect the management approach of the Environment Ministry, namely, Government sets the vision, but relies on the various social sectors to work out the details and implement it. The Ministry has found that success depends on three elements:

1. A supportive public - achieved through education projects and extensive public awareness campaigns.
2. Groups able to help define the Government's vision - achieved by including the private sector and organisations in discussions and debates, and by funding NGOs.
3. Building a solid foundation of respected scientific data - achieved through increased government support for the RIVM. This is a scientifically autonomous institute that produces annual reports on the state of the Netherlands' environment and the success and failures of environmental policy. This feedback contributes to reviews of the NEPPs.

Decentralisation of decision making has also been seen as helpful in achieving policy goals for sustainable development. There is a need for getting the balance right, however, and the need to make sure that decentralisation is accompanied by specific attention to integration across levels of government.

Achieving Success for Consultative Processes

In the Netherlands, success of the consultative processes for national environmental policies have been attributed to the following four main criteria:

- The government provides a credible argument for change based on solid scientific consensus, such that both private sector and public stakeholders believe in the benefits of the process and the strategy.
- Government recognises that industry involvement in both the creation of policies and solutions encourages industry participation in the success of the strategy. Long-term success requires each participant to accept personal and corporate responsibility for the solution.
- The success of the process rests on continuity. This means industry can sustain its operations while reducing its emissions and the ability of local government to monitor and organise its efforts.
- Each sector needs to secure benefits and recognise concessions of the other parties. (OECD 2002).

4.2.3 Local Agenda 21 initiatives

Chapter 28 of the Agenda 21 document calls on local authorities to work with their local communities to achieve a local action plan, a Local Agenda 21. This process recognises the role local communities have to play in shaping their own future and it is an attempt to empower local communities in the decision-making process.

The International Council for Local Environmental Initiatives (ICLEI) has surveyed the extent to which local authorities have made formal commitments to Local Agenda 21 initiatives.[10] Surveys in 1997 and 2001 have tracked a dramatic, three-fold surge in Local Agenda 21 activities in all regions of the world in the last few years (Commission on Sustainable Development, 2002). By December 2001, over 6,400 local authorities in 113 countries had either made a formal commitment to Local Agenda 21 or were actively undertaking the process.[11] The greatest participation level overall is in Europe. Almost 100% of Swedish local authorities are engaged, which reflects a strong national campaign. Similarly, in the UK a strong level of support and guidance from the Government has meant that over 90% of local authorities have now produced Local Agenda 21 documents.

United Kingdom Initiatives at the Local Level

In the UK the Local Government Act 2000 led to the incorporation of Local Agenda 21 activities on sustainable development into other initiatives. This Act requires all municipalities to complete Community Plans for the social, economic and environmental well-being of their area and also for sustainable development in the UK. The current challenge is to ensure that local authorities genuinely pursue sustainable development through their community plans and they build on the work and the networks that have already been established.

(Commission for Sustainable Development, 2002)

The survey also explored the focus of activities and concerns of Local Agenda 21 processes. The results were that, overall, environmental processes (46%) and sustainable development (36%) were well ahead of narrower economic development (14%) and social (7%) activities. This suggests that many local authorities were classifying activities as 'sustainable development' that were not addressing all three of its components. Priority issues varied between high- and low-income countries, while the only issue that was equally ranked by all countries was management of water resources. "Water resources management may refer to water quality, conservation, or availability - issues faced by municipalities all over the world." (Commission on Sustainable Development, 2002).

Despite the great differences in cultures, governance structures and development levels, the survey highlighted a number of issues and messages that are relevant to New Zealand as well as to other countries. Key messages in the report were:

- **Political commitment by central government and financial support are key factors to the implementation of Local Agenda 21**. Their absence was recognised worldwide as key obstacles regardless of national income level. The same point emerged in the 2002 OECD report referred to above.
- **Create national policies that strengthen the ability of local government to advance sustainable development**. Local governments look to their central government to create the policy environments that support their work. This includes having fiscal frameworks that support their abilities to respond effectively to community priorities. The report emphasised the importance of re-evaluating perverse subsidies and local funding mechanisms.
- **National support programmes need to recognise the diversity of local conditions and circumstances.** One size does not fit all. Central government support should follow extensive consultation and community analysis at the local level to return the best progress on meeting needs and developing effective action plans.
- **The development of locally relevant mechanisms to monitor and evaluate progress needs to be supported.** Regular

assessments of progress against objectives are needed by local governments while central governments need to understand the degree to which local communities are responding to national priorities.

- **Support the development of country-wide Local Agenda 21 campaigns.** The report concluded "National campaigns, endorsed and financed by the national government, have continued to propel the growth of Local Agenda 21 activities." Important synergies can be created. Local governments can be important players in promoting national programmes. And local governments, even in the absence of national campaigns, can play strong coordinating roles.

Local Agenda 21 in Practice

Peru - Cities for Life

In 1996, two cities started the 'Cities for Life Forum' as an offshoot of an urban environmental best practices project. With little government support it has now grown to 15 city-level Local Agenda 21 processes. The Forum includes Peruvian municipalities, universities, NGOs, and private sector representatives. The Forum has also improved the understanding of critical environmental problems facing vulnerable populations and improved the capacity to deal with them. Key factors to its success include political support from city mayors, large-scale and ongoing public participation, as well as the success of specific projects and action research studies.

European Sustainable Cities and Towns Campaign

In 1994, the first European Sustainable Cities and Towns Conference in Aalborg, Denmark, led to the European Sustainable Cities and Towns Campaign. It also produced the Aalborg Charter, which outlines a commitment to pursue sustainable development at the local level through Local Agenda 21 and similar programmes. Over 1,300 European municipalities have now signed up to the Aalborg Charter and joined the Campaign with its commitment to sustainable development, making it the largest regional campaign for local sustainable development. An alliance of five organisations works to provide training, information and resources to the municipalities involved in the campaign, which is also promoted through regional conferences.

(Commission for Sustainable Development, 2002)

4.3 Key points

- A number of recent 'environmental' statutes in New Zealand have incorporated the concept of sustainability. This is not the case with social and economic-related statutes, indicating that sustainable development may be perceived as only relevant to environmental decision making.
- The contribution that the RMA has made to sustainable development in general, and sustainable management of natural and physical resources in particular, is difficult to determine in the absence of any outcome evaluation since the RMA was enacted.
- Acceptance of sustainable development by central government has, until relatively recently, been slow in New Zealand compared with many other OECD countries. It was not until August 2001, some nine years after the Earth Summit, that the Government announced its intention to produce a national strategy on sustainable development. Meanwhile, significant efforts have been made by local government and business and community groups in New Zealand to implement the principles behind sustainable development within their respective sectors.
- The Government has introduced, or has under consideration, a number of strategies and policies that contribute in some way to aspects of sustainable development. The intention is to draw all these together under an overarching sustainable development strategy. In some cases the links between the individual strategies and sustainable development are not clear because they were not developed with sustainability in mind. It would have been more logical to have had in place a sustainable development strategy before all other related strategies were considered, so that the links were clear. That said, the proposed development of a strategy for sustainable development and other strategies that incorporate sustainability shows great promise for the future in New Zealand.
- Successful implementation of sustainable development initiatives among other OECD countries has been the result of efforts to gain

public support, and achieve good coordination and integrated decision making. Having the commitment and the capacity to focus efforts towards actions over long-term timeframes has also been a major factor.

- In some OECD countries, such as the Netherlands, environmental management systems have evolved and broadened to cover sustainable development. Key elements of the evolution were the failure of compliance approaches leading to a focus on developing shared visions and mechanisms for cooperative implementation.
- Local Agenda 21 initiatives can be effective means for implementing sustainable development. Support and guidance from central government is also important to ensure that local authorities take up the challenge in ways that achieve national as well as local goals.

1 The background paper, associated with this report, on government strategies can be found on the Parliamentary Commissioner for the Environment's web site: http://www.pce.govt.nz/.

2 See http://www.mfe.govt.nz/new/pages/questions.html for the Prime Minister's announcement, and http://www.liveupdater.com/labour/LiveArticle.asp?ArtID=93106551 for the more detailed proposal to develop the New Zealand Sustainable Development Strategy.

3 A background paper, associated with this report, on the evolution of indicators can be found at the Parliamentary Commissioner for the Environment's web site: http://www.pce.govt.nz/.

4 A recommendation in Patterson (2002) for an index consisting of environmental, social and economic sub-indices, all of equal weighting.

5 Further information can be obtained from the Statistics New Zealand web site: http://www.stats.govt.nz/.

6 Further information can be obtained on the environmental indicators web site: http://www.environment.govt.nz/.

7 The Ministry for the Environment contributed funding to the New Zealand Business Council for Sustainable Development (NZBCSD) to produce a report on how eight businesses went about working towards TBL reporting. A copy of the report is available on the NZBCSD web site at: http:/www.nzbcsd.org.nz/_attachments/casestudies.doc.

8 These examples are for illustrative purposes only. Their use in this report does not necessarily mean that they have been endorsed by the Parliamentary Commissioner for the Environment.

9 The website for the Canadian Commissioner of the Environment and Sustainable Development is www.oag-bvg.gc.ca/domino/oag-bvg.nsf/html/environment.html.

10 The website for the International Council for Local Environmental Initiatives is www.iclei.org.

11 This reportedly includes 37 councils in New Zealand.

Section 5

Summary of Progress

This chapter draws some conclusions about progress on sustainable development in New Zealand based on the review and analysis carried out in previous chapters. In addition, a summary of the report's findings against the expectations identified in section 1.2.3 is presented in table 5.1.

5.1 Maintaining the unique characteristics of New Zealand

New Zealand has many unique ecological, social and economic characteristics. New Zealanders highly value many of the qualities and range of benefits these characteristics bestow.

Fundamental to the 'strong sustainability' model of sustainable development and to what makes New Zealand unique is the protection of our ecological 'bottom lines'. Maintaining the ecological sustainability of key parts of our environment will be critical to the sustainable development of New Zealand as a whole. Intensification of our urban communities and agricultural land use is challenging the ecological sustainability of key environmental resources, particularly freshwater resources, soils and air quality. Current information indicates that impacts on these resources are and will continue to be unsustainable if we continue with business as usual. Creating sustainable urban communities will be a key challenge for the 21st century, as will finding ways of mitigating the effects of intensified agricultural land use, especially dairying.

5.2 Understanding sustainable development

Traditional linear, short-term and silo thinking are barriers to sustainable development in New Zealand. The fundamental shift in thinking that is needed to progress sustainable development has been missing in all but a few sectors. There have been failures to grasp opportunities to improve understanding of ecological principles and the importance of maintaining natural capital in order

to achieve sustainability and the quality of life that New Zealanders value. Education for sustainable living has not been supported to the extent needed to raise public awareness about sustainable development, what it means, and how it can be implemented. While some small-scale community initiatives have been successful, efforts to encourage businesses to think about the potential consequences of their choices and actions, particularly for long-term sustainability, have only recently started to get support from central government (e.g. Triple Bottom Line Reporting).

The 'strong sustainability' model has not been widely adopted in New Zealand. This model promotes social and economic development based on long-term prosperity (quality of life) and maximising natural capital, while recognising that there are ecological limits to certain types of growth. It avoids making trade-offs between economic, social and environmental goals where short-term economic or social benefits later give rise to longer-term or irreversible environmental impacts and associated costs to society. The value of operating within ecological limits and the opportunities this creates for certain types of growth (e.g., in the tourism and primary production sectors) has not been fully appreciated.

Until recently, successive governments have not followed through on commitments made in 1992 to Agenda 21. However, in the period leading up to the World Summit on Sustainable Development in 2002, the Government has given an undertaking to produce a sustainable development strategy, that will include time-bound and target driven goals.

Successful implementation of sustainable development initiatives among other OECD countries has been the result of efforts to gain public support, and achieve good coordination and integrated decision making. Having the commitment and the capacity to focus efforts towards actions over long-term time frames has also been a major factor.

Key impediments to the implementation of sustainable development in New Zealand are insufficient knowledge and capacity to support its implementation. This is knowledge in its broadest sense - research, information, indicators, people and organisations with the capability to apply sustainable development principles. Case studies examined in this review indicate that there are organisations and individuals possessing the knowledge, capacity and enthusiasm to promote sustainable development. However, they are either uncoordinated or there are just not enough of them in the right places to make a significant systemic change.

Local Agenda 21 initiatives are important means by which sustainable development can be implemented at the local government level. However, leadership, support and guidance from central government needed to ensure that local authorities take up the challenge in ways that achieve global, national and local goals have been missing until recently. The Local Government Bill is an important new component in this area.

Leadership is an important driver of change and influence on progressing sustainable development. This has been demonstrated in some sectors (community groups, NGOs and business organisations) showing how environmental, social and economic benefits can be successfully and easily achieved through implementation of sustainable development principles. Such groups are 'walking the talk', one of the most effective forms of leadership given that most in society tend to be followers rather than leaders.

5.3 Measuring progress

Measuring progress towards sustainable development is complex. It involves combining measures of biophysical and ecological realities, human values and aspirations, and socio-economic trends. The challenge has been to make sustainability indicators easily understood and more meaningful than, for example, GDP which is widely, but inappropriately, accepted as a measure of prosperity.

Local authorities have been disadvantaged by the slow development of environmental indicators. This has crucially limited the amount of nationally consistent information on the environment, and the ability to ascertain whether we are making any progress towards environmental outcomes and, in particular, sustainability.

Information collected by regional councils, as required by the RMA, has not been gathered according to a nationally consistent set of standards. The Commissioner has identified fundamental barriers affecting monitoring and information systems including the availability of basic scientific information. Many national environmental databases have not been updated, while others were lost during 1990s restructuring of government research organizations and related agencies. Consequently, it is difficult to objectively judge progress in a number of areas bearing on environmental management.

Linked to inadequate information is the equally crucial need to have appropriate research initiatives underway to support sustainable development programmes. The Commissioner has commented on research shortcomings (e.g. urban systems). Without adequate research, linked to better information, New Zealand will be hampered in getting the vital feedback and signals necessary to adjust and adapt environmental management to future needs.

5.4 The role of the Resource Management Act 1991

There was an optimistic start to the post-Earth Summit decade. It appeared that New Zealand, with the passage of the Resource Management Act (RMA), had not only rationalised resource management statutes, but had also established an efficient, economically rational regime for managing natural resources. Although the RMA does not explicitly deal with sustainable development, it addresses one aspect of it - the sustainable management of natural and physical resources. This is the environmental management component of sustainable development.

The RMA has been of mixed benefit to tangata whenua. It recognises the importance of the many relationships between the culture and traditions of tangata whenua and the land. There is more awareness of the practical benefits of more effective involvement of tangata whenua, and the RMA gives recognition to consultation and the ongoing duties of kaitiakitanga. However, many iwi have lacked the capacity to participate effectively in RMA processes and the responses from central and local government agencies to their responsibilities in relation to the Treaty of Waitangi and the interests of tangata whenua have been variable.

The extensive criticisms of the RMA have largely been about process, rather than the substance of the Act, and the broader goal of advancing the country towards sustainability has largely been forgotten in disputes over detail within the RMA. The RMA was a farsighted piece of legislation. However other mechanisms are also needed to advance sustainable development.

5.5 Stocktake of PCE investigations

A stocktake of PCE investigations over the last decade (see appendix 2) has highlighted a number of problems exacerbated by silo thinking, of focusing only on narrow goals and failing to recognise and take into account the linkages between economic, social and environmental interests:

- poor integrated decision making
- inadequate cooperation and communication between sectors and agencies
- lack of structural and management incentives to work towards a more collective public good.

Another point emerging from the stocktake relates to the sequencing of strategies and legislation that affect sustainable development. While the major environmental management Act (the RMA) was in place by 1991 a number of substantial and

important initiatives to develop strategies relating to sustainable development have been initiated only within the last few years. This indicates that policy initiatives were more likely to be driven by reactive responses to relatively smaller issues, rather than by broader policy (sustainability) needs.

Some PCE investigations have shown that consultation mechanisms and practices have improved over the decade, while in other instances we need a wider range of mechanisms and opportunities to effectively engage in meaningful and constructive debate on sustainable development issues.

5.6 Key points

- New Zealand could have been a leading light on sustainable development, given its relatively low population density, overall environmental quality, and its predominantly agriculture-based economy. Instead, sustainable development has not progressed in New Zealand in a coordinated and meaningful fashion over the past ten years. Throughout the 1990s successive governments largely ignored the Agenda 21 commitments made back in 1992, and did not provide the leadership necessary to support and guide sustainable development in New Zealand.
- A substantial impediment that existed for much of the past decade was an ideological commitment to let market solutions and non-intervention by government, leaving a wide range of environmental decisions to be resolved on a case-by-case basis (within the RMA framework). 'Enabling' measures were preferred over regulations, and little effort was made to develop other policy alternatives. Market failures were not adequately factored into policies. This had the effect of inhibiting initiatives that could have provided broader strategic visions and directions over environmental management. For example, coherent management of our extensive ocean resources was not addressed from a perspective of sustainable development.
- Other sectors, including individual local authorities, business organistions and community groups have made progress with their own initiatives. They have endeavoured to incorporate sustainable development principles into their policies and activities, and have encouraged others to do likewise.
- It is only in recent years that central government has begun to develop various strategies related to sustainable development, and started work on a New Zealand strategy on sustainable development. In retrospect, there is no reason why the process of developing such a strategy could not have commenced soon after the Earth Summit. However, a sustainable development strategy is important but it is only a first step. As a framework for action, it is not evidence of action. That said, the development of a strategy for sustainable development and other strategies that incorporate sustainability shows great promise for the future in New Zealand.
- It is time now to look ahead for opportunities to convert strategies into actions and make genuine progress towards sustainability for the benefit of society, the environment and the economy.

Table 5.1: Findings of This Study Against the Expectations Set Out in Section 1.2.3

Expectations	Findings
1. A national strategy (or equivalent policy instrument) for sustainable development has been established, including clear goals, objectives and targets. Such a strategy places sustainable development in a New Zealand context and outlines the manner in which the principles of Agenda 21are applied in New Zealand.	Proposals to develop a New Zealand Sustainable Development Strategy (NZSDS) were not announced until August 2001. The strategy is likely to be completed in August 2002 in time for presentation at the World Summit on Sustainable Development. This is an important step that should formally establish New Zealand's position on sustainable development. However, it should have been adopted soon after the Earth Summit in 1992, as was the case in Australia (see section 2.2). The Government has already decided that elements of the NZSDS are to include initiatives already underway, including the development of waste, energy, biodiversity and oceans strategies, together with a set of key principles. Logically, the NZSDS should have been developed first and provided the framework for the various strategic initiatives currently underway, linking them and establishing priorities for progressing sustainable development.
2. Appropriate legislative and institutional arrangements have been put in place to give effect to Agenda 21principles and sustainable development.	Statutes enacted or under consideration (eg the Local Government Bill) that include provisions that refer to sustainable development concepts are generally those that deal with the management of natural resources or local authority responsibilities. Statutes that directly affect social and economic issues do not incorporate equivalent principles of sustainability, implying that sustainable development is seen primarily as an environmental or resource management issue (see section 4.1.1). No single agency or group of agencies has the responsibility for co-ordinating or overseeing the implementation of sustainable development in New Zealand. An unstructured approach to sustainable development can give rise to gaps or overlaps and lead to ineffective and inconsistent implementation. A number of government and non-government organisations play an active role in promoting sustainable development, but not in any way that is formal, integrated or co-ordinated. An exception to this has been the recent process to develop a New Zealand Strategy on Sustainable Development, which was co-ordinated by the Department of Prime Minister and Cabinet (see section 4.1.3).
3. Evidence exists that sustainable development has been widely adopted and relevant programmes have been implemented by central and local government agencies, and that other sectors have also embraced the concept.	Since 1992, successive governments have failed to adopt and implement broad-based sustainable development policies or programmes. The current proposal to prepare a NZSDS is the first attempt at producing a comprehensive strategy. It is encouraging to note that funding from the Foundation for Research, Science and Technology is being made available for research into sustainable development (see section 4.1.6). Among local authorities the implementation of sustainable development is variable. Some local authorities have wholeheartedly incorporated sustainable development into their policies and practices, while others regard it as outside their core statutory responsibilities and have, therefore, disregarded it. There has been no attempt to co-ordinate a nation-wide Local Agenda 21 programme. A number of community groups have embraced the concept of sustainable development and initiated local actions (see section 4.1.8 and case studies). Some businesses and business organisations have also recognised the benefits associated with a more sustainable approach to consumption and production (see case studies).

Table 5.1: Findings of This Study Against the Expectations Set Out in Section 1.2.3 *continued*

Expectations	Findings
4. A framework of sustainable development indicators and associated monitoring systems has been established to assess progress towards sustainable development.	Successive New Zealand governments since the Earth Summit in 1992 have not been active in developing indicators of sustainable development. New Zealand is, therefore, not in a position to measure and accurately assess the country's progress towards sustainability. However, work is currently underway to develop a set of sustainability measures that are intended to combine socio-economic indicators with environmental performance indicators (see section 4.1.4).
5. Barriers to achieving sustainable development goals and objectives have been identified and are being addressed.	A number of barriers (or impediments) to sustainable development have been identified in this report (see section 3.4). They include issues such as: • various, conflicting and confusing interpretations of the term 'sustainable development' • 'silo-thinking', particularly among agencies in the public sector • inertia or complacency arising from perceptions that New Zealand is clean and green, and will remain so • the emphasis on economic growth as the first step towards sustainability, with little regard for ecological concerns and social values • lack of leadership to promote sustainable development in all sectors • the scale of some sustainable development issues make them too difficult to deal with • lack of opportunities to publicly debate issues around sustainable development • generally a low awareness of the linkages between economic, social and environmental considerations, and the need for people to take responsibility for avoiding adverse consequences of their actions on the environment.
6. Agenda 21 principles influence social, economic and environmental policy-making.	So far, there is little evidence of Agenda 21 principles having influenced **integrated** social, economic and environmental policy-making. The various government strategies that have been developed, or are under development, show that they have not necessarily been directly influenced by Agenda 21 or linked under a sustainable development framework (see chapter 4). When the Government announced in August 2001 that it intended to produce a NZSDS, it did so on the basis that the principles of sustainable development should underpin all of the Government's economic, social and environmental policies. The success or otherwise of this goal cannot be assessed until the NZSDS is completed and put into effect.
7. Public awareness programmes and other initiatives have been introduced to promote sustainable development.	The Ministry for the Environment has undertaken a number of initiatives to promote sustainable development (eg see sections 4.1.5 – triple bottom line reporting, 3.1.2 – Rio+10 community programme, and 3.2.3 – New Zealand's environmental education strategy), as has the New Zealand Business Council for Sustainable Development and a number of other businesses, local authorities and community organisations (see section 3.4.4). These have been important in raising public awareness about sustainable development. However, there are opportunities for other agencies in the social and economic spheres to become involved and support the concept of sustainable development among their constituents.

Section 6

Future Challenges and Recommendations

This chapter explores issues that will have a significant influence on progressing sustainable development in New Zealand, and makes recommendations to central and local government.

6.1 Introduction

New Zealand could and should be a leader in sustainability. Its small population relative to land area places a lot less pressure on natural systems than many other OECD countries. If New Zealand cannot function in a sustainable way, it leaves little hope that any developed nation can do so. But are we functioning in a sustainable way? If it is measured in terms of ecological footprint, perhaps we are, but by any other measure we are not. Trends show that our energy consumption is rising faster than economic growth (see figure 3.1). Our production of solid and liquid wastes similarly continues to grow on a per capita basis indicating that more resources per capita are needed to deliver the desired qualities of life. Intensification of various land uses is creating environmental impacts which current information indicates is unsustainable. We have an open market system that does not regulate the importation of used, end-of-life goods such as motor vehicle tyres that soon become a waste management problem. The price of such goods does not reflect the costs of their treatment or disposal and the subsequent long-term impacts they have on the environment. Free trade agreements put added pressure on biosecurity systems to manage the risk of imported goods carrying exotic pests that could irreversibly damage New Zealand's environment and economy.

We need to improve awareness about sustainable development among all sectors of society, and identify practical things that organisations, communities and individuals can do to work towards sustainability goals.

6.2 Creating a vision and direction for the future

Sustainable development is not an easy concept to define or communicate, hence the plethora of definitions and interpretations that have evolved over the last fifteen or so years. To make it meaningful and generally acceptable in the New Zealand context, sustainable development has to be supported by a strong vision and clear goals established through effective consultation processes. Sustainable development needs to be relevant to, and demonstrate benefits for, all sectors of New Zealand society as well as the ecosystems that we rely on and value.

At present, meeting society's expectations generally involves making choices and trade-offs, some of which may have potentially harmful and irreversible effects on the environment. To avoid such adverse outcomes, decision makers right across the spectrum from governments and multi-national corporations through to individuals need to be aware that the environment, the economy and society are interlinked and that opportunities in one of those areas may need to be constrained due to potential impacts in another. Equally, there may be opportunities that benefit all three. In any case, sustainability is not achieved by taking a single issue approach to decision making. Understanding sustainability is about having the foresight and capacity to tackle broader and strategic issues, and to address the potentially wide-ranging consequences of the choices that we all have to make.

The Local Government Bill will enable local authorities to consult on and implement long-term plans that address sustainability issues at the local level. However, until the proposed New Zealand Strategy on Sustainable Development is completed, there remains no national vision that focuses on sustainability. Nor is there any obligation on local authorities to ensure that their long-term plans for their communities are consistent with a national strategy on sustainable development. The Growth and Innovation Framework and various strategies that have been completed or are under development (see table 4.2) all target particular aspects of economic growth, social development or environmental protection in various degrees of isolation. These initiatives need to be coordinated within a sustainable development framework and quickly followed up by a range of actions and targets that address the priority areas for New Zealand.

Monitoring and review systems, and associated sustainability indicators, will enable progress towards sustainable development outcomes to be assessed and, if necessary, revised to meet changing needs. Such monitoring and review systems (and their indicators) should ideally give a complete picture of changes in quality of life in New Zealand in terms of the environmental, social and economic outlook. Any changes can then be compared and contrasted with the overall vision and direction established at the outset.

6.3 Future demographic prospects

Population trends and movements will contribute to environmental and social pressures and economic growth. A growing population places more demands on land, housing, infrastructure and farming practices, consumes increasing amounts of energy and produces more waste that needs to be disposed of.

Statistics New Zealand points out (SNZ, 2000b) that population trends are difficult to predict but some broad trends can be identified. The population of New Zealand is already close to 4 million and is projected to peak at 4.6 million around 2044. From a global perspective, the world's population tripled in the past fifty years to a level of 6.1 billion, and is expected to grow to a range of between 7.3 and 10.7 billion by 2050 (OECD, 2001c). This will raise both the scale and distribution of pressures on the global environment, and New Zealand will not be isolated from such effects.

The regional distribution of New Zealand's population will continue to change, with the

northern North Island (Northland, Auckland, Waikato and Bay of Plenty) expected to increase its share. The Auckland urban area is projected to have the greatest numerical increase, up from 1 million to 1.4 million - equivalent to adding the current Auckland City population to the area by 2021. By this time Auckland will be home to one-third of all New Zealanders. Overall, New Zealand will become more urbanised in the next two decades, requiring further investment in infrastructure and potentially increasing social pressures on urban communities, and environmental pressures on resources.

The age structure of the population will undergo significant changes and will take on an older profile. A burgeoning elderly population will place increasing pressure on public expenditure on superannuation and health. This may have the effect of reducing the amount of public funding available for environmental management.

6.4 Doing business and maintaining ecological health

This section could also be entitled 'doing business through protecting the environment' since New Zealand's economic and social development relies heavily on the quality and health of its environment, particularly in businesses such as tourism, the growing film industry, fisheries, forestry, agriculture and horticulture. Natural capital contributes some 20% of the per capita wealth in New Zealand, which is four times that of North America and ten times that of Western Europe (see chapter 3). Those who focus primarily on economic growth as the priority for New Zealand's future must also recognise and acknowledge the importance of New Zealand's environment for its overall prosperity.

New Zealanders place a high value on the opportunities and experiences that New Zealand's generally high quality environment offers. New Zealand has many unique species (e.g. Gondwanaland remnants) and natural features that distinguish it from other countries. Tangata whenua have strong cultural and spiritual connections with the environment, natural resources and places. All these important characteristics of New Zealand have been undermined over many years of human settlement and exploitive resource use ('quarrying'). They will continue to be threatened as a result of poor decisions and policies that do not adequately take into account the potential long-term impacts on ecological sustainability.

Central and local government policies have, over many years, placed emphasis on economic growth, whether this has been in relation to the nation as a whole or regional development. This is to be expected and is a key role for government. Another important role for government is to ensure the provision of public goods[1] and services such as environmental protection, public health, and social welfare. Unless all economic, social and environmental needs are considered together, as part of a 'sustainability assessment', there is a potential for distortions to occur leading to unsustainable growth and long-term adverse consequences.

The government has identified one of its major challenges ahead is to achieve its economic objective: 'to return New Zealand's per capita income to the top half of the OECD rankings and maintain that standing' (New Zealand Government, 2002). The biggest challenge is to do this while also maintaining or improving the environmental conditions on which so much of our economic activity depends. The economy-environment linkage is strategically important for New Zealand, as is maintaining the life-supporting capacities of ecosystems, and valuing natural assets in their own right, independent of their ability to supply human ends.

Work is already underway to develop a set of suitable sustainable development indicators for New Zealand. Another matter that needs to be considered is the inclusion of a statement on the state of natural resources (natural capital) as part of the Statement of National Accounts. With inappropriate incentives towards the use of

natural capital, economic activities can lead to pressures that risk reaching critical thresholds in the regeneration capacity of resources and of inducing irreversible effects (OECD, 2001c).

An assessment of the state of natural resources would provide a picture of the extent to which natural capital has been affected by economic and social policy, and would identify critical pressure points that need to be addressed if we are to continue along a path towards sustainability. Such an assessment of natural capital would need regular updating to enable trends to be assessed.

6.5 Changing trends and behaviour through leadership and public awareness

As outlined in chapter 3 and appendix 2, current trends in consumption are signs that New Zealand is not functioning in a sustainable manner. These include energy and natural resources, production (e.g. of waste), growth in urban areas (e.g. Auckland, Wanaka, Queenstown), biodiversity losses and biosecurity threats (e.g. due to introduced and invasive species), and land-use and water issues (in both rural and urban areas). Current problems can only get worse if New Zealand does not take action now to implement sustainable development-based decision making and behaviour in all sectors of society, from central and local government and the business sector to communities and individuals. Leadership in all sectors will be crucial if New Zealand is to make progress on sustainable development. Effective leadership is needed to influence, coordinate, support and achieve results that will make a difference. While small groups working in isolation may achieve some progress in their own particular areas of interest, at a strategic level a more meaningful and overall shift towards sustainability is more likely to occur when there is a combined effort led by 'champions' of sustainable development. Some sectors have already made significant strides and demonstrated the sort of leadership that is needed (e.g. the New Zealand Business Council on Sustainable Development and some local authorities such as Christchurch and Manukau City Councils). However, central government still has some way to go to demonstrate its commitment to sustainable development.

6.6 Sustainable development in action

Evidence in New Zealand and overseas suggests that one of the major drawbacks to implementing sustainable development principles has been a general lack of understanding of what the term means in practice. One way of dealing with this is to promote specific activities, such as waste minimisation projects, that in a particular way contribute towards sustainability. Such projects need to have clear, achievable and measurable targets that can be met within a realistic timeframe, and need to demonstrate the connection between choice and consequence. For example, choosing to compost household organic waste reduces the amount of waste sent to landfill, provides nutrients for home gardens and reduces reliance on chemical fertilisers. Introducing organisations and individuals to 'bite-sized chunks' of sustainability projects may be more meaningful than endeavouring to influence behaviour by conveying the notion of sustainability in its broadest but vague sense.

Throughout chapters 3 and 4 of this report there are examples of sustainability initiatives that illustrate achievements by a range of sectors. Sustainable behaviour results from thinking about collective or individual resource use decisions and the consequences of those decisions. Unless the concept of sustainable development and its importance to New Zealand is better understood and more widely accepted, we are likely to see current trends of increasing consumption and production continuing. Better understanding can be achieved through efforts such as education for sustainability, examples of good practice and economic instruments that provide incentives for resource efficiency, resource recovery and an overall reduction of environmental 'bads'.

6.7 Adapting to changing needs and circumstances

Ecological sustainability decisions rely to a large extent on good information, which in turn is the product of good monitoring and research. Situations will arise where ecological sustainability decisions have to be made on the best available, but not necessarily complete, information. In these circumstances both precautionary and adaptive management approaches are useful. This enables decisions to be made in a timely fashion, but sets in place a process to proceed with caution and to review those decisions in the light of accumulated knowledge and new information. When applied to ecological sustainability in particular, adaptive management includes the feedback loop needed to assess trends, establish connections, review progress, and make any necessary adjustments to achieve sustainable development objectives and targets.

6.8 Strategic-based, systems-based and values-based thinking

Sustainable development is a long-term commitment and the results are not necessarily evident in the short-term (e.g. within election cycles). It commits decision makers to consider economic, social and environmental effects on both current and future generations. Actions need to be based on an overall strategy and plan for implementing sustainable development that is intersectoral, embraces community values, and places certain basic obligations on future decision-makers. The Local Government Bill will potentially contribute to achieving this.

Systems thinking is particularly important for ecological sustainability. Component parts of ecosystems cannot be conveniently compartmentalised and managed separately. It is necessary to consider not only the actual and potential effects of an activity on one part of an ecosystem, but also the likely consequential effects on other parts, which may lead to unintended outcomes. Systems thinking is also valuable for considering broad issues associated with such things as urban development, transport strategies, and methods for decoupling economic growth from unsustainable consumption and production.

A major challenge for local government will be to determine communities' values and expectations in relation to quality of life, quality of the environment and overall well-being, and to find ways to achieve these while maintaining a healthy economy. It will involve 'stepping back' from individual decision problems and framing them in a broader view of what communities want to achieve. From an ecological point of view the challenge is to determine the ecological values that need to be considered in addition to any anthropocentric expression of values.

6.9 Taking responsibility

Sustainability is not something that a government department, local authority or other public agency has sole responsibility for making happen, although they have significant leadership and guidance roles. Sustainability is achieved by organisations, businesses, communities and individuals taking responsibility for controlling the resources they use, the energy they consume, the waste they produce, the impacts they may have on biodiversity, and so on. They can also effectively influence the suppliers from whom they purchase goods and services by choosing only those who offer services or goods that are based on sustainable practices.

Sustainability is more likely to be achieved if the changes it requires, for example to lifestyles, are accepted and become the norm in terms of society's attitudes and behaviour. This will require, among other things:

- understanding and, where appropriate, improving public awareness about sustainability, what it means, and ways in which it can be achieved (contrasted with the consequences of continuing down an unsustainable pathway)
- understanding and giving effect to the attitudes, values and ethical beliefs that New Zealanders hold

- encouraging individuals, communities and organisations to participate in sustainable development initiatives and decision making
- promoting incremental changes that show measurable results over a relatively short timeframe.

6.10 Creating incentives

Governments tend to rely on economic incentives to encourage behaviour modification towards more sustainable practices. Economic instruments on their own are generally not totally reliable since people do not always make choices on the basis of price alone. Economic instruments need to be accompanied by a range of non-regulatory measures such as education for sustainable development, voluntary codes of practice, adoption of practices such as Triple Bottom Line Reporting among organisations, and rewards (and awards) for adopting sustainable practices. These all contribute to bringing about change that can have benefits for society in general or individual stakeholders in particular.

6.11 Growth versus development

Governments' continual emphasis on economic growth as a priority has the potential to accelerate us towards unsustainability if it simply means escalating energy consumption, waste and pollution problems. Instead, emphasis could be shifted to development that produces less waste, adds more value to goods and services, and manages rather than 'quarries' resources. In this context, sustainable development could be regarded as growth that takes account of limitations and consequences, rather than growth for its own sake, which may generate social and environmental burdens on current and future generations. Sustainable urban development, for example, creates rather than destroys communities, and connects people with natural surroundings instead of isolating them from nature. The most important point is that growth is not an end in itself but simply a means to achieve what most people want - quality of life. Thus the challenge of sustainable development is maintaining and enhancing quality of life that may or may not necessitate economic growth in its traditional sense, i.e. an endless expansion of the economy.

6.12 Coordination of effort and integrated decision making

Within central and local government there are opportunities to break down barriers to achieving sustainability. Barriers include the structure, funding and nature of government departments that encourage them to operate within a narrow focus (e.g. with particular interests in promoting either economic, social or environmental objectives) and to compete in relation to the policy advice they provide to the government. The report of the Advisory Group on the Review of the Centre, released by the Minister of State Services in December 2001 concludes that, although the New Zealand public management system provides a sound platform on which to build, it needs to meet more effectively the needs of Ministers and citizens. It proposes improvements such as integrating service delivery across multiple agencies; addressing fragmentation of the State sector; and encouraging strong leadership. Government departments will be expected to set up inter-agency teams to deal with operational matters that cross over into each other's areas. This coordination and collaboration also needs to be encouraged for addressing matters of national strategic importance for New Zealand, including sustainable development.

6.13 Encouraging local initiatives

There are many examples of local initiatives to promote sustainability, some of which have been highlighted in this report. Local authorities and the private sector have supported some of these initiatives, and others have received financial support from the Ministry for the Environment's Sustainable Management Fund. Consideration needs to be given to establishing a 'Sustainable Development Fund'. This would have a stronger focus on sustainable development, encouraging

initiatives that meet combined environmental, social and economic objectives.

6.14 Legislative principles

Recent legislation such as the Energy Efficiency and Conservation Act 2000 and proposals in the Local Government Bill introduce into their purpose and principles statements the concept of sustainability. This is an important step in implementing the government's economic, social and environmental policies and needs to be encouraged in the development of future legislative proposals that have similar objectives.

6.15 Research

The Foundation for Research, Science and Technology has sustainability research investments of over $57 million per year and is undertaking a review of these between February and October 2002 to clarify future directions and stimulate new relationships amongst a range of stakeholders prior to the 2002/03 reinvestment process. This is an opportunity for research providers and others with an interest in sustainability issues to become involved in guiding future investments in this research.

Sustainability research into human settlements (our towns and cities) is a particularly critical need. Research to underpin the design and governance of our cities is scattered and not tied into current governance systems (local and central) that impact on city development and functionality in its widest sense. Given that more than 85% of New Zealanders live in towns and cities, the implementation of sustainable development must be human settlement focused. Government investment, despite recent increases, and research capacity are woefully underdeveloped in this area.

6.16 Encouraging dialogue on sustainability

As noted earlier, sustainable development and sustainability are difficult concepts to understand. This is partly because they are ill-defined and partly because the term 'sustainable' has been applied to mean different things in different contexts (e.g. 'sustainable economy' and 'sustainable business' have a different interpretation than, for example, 'sustainable urban environments' and 'sustainable ecosystems'). Opportunities for public debate on sustainability are important if the key principles behind the concept are to be understood, clarified and put into effect through central and local government policies, business plans, and individuals' decisions. The forthcoming World Summit on Sustainable Development (WSSD) in August/September 2002 creates a timely opportunity for the media to be catalysts for such debate, to provide commentary on what sustainable development means for New Zealand, and to convey expressions of New Zealanders' values related to sustainability.

6.17 Capacity and capability

If sustainable development is to become a cornerstone of future economic, environmental and social policies, it will be necessary to ensure that within central and local government and within research institutes there is the capacity and people with the capability of making the links between all three dimensions of sustainability. Among tertiary education establishments there needs to be thought given to the design of courses that offer the development of skills in the sort of systems thinking and integrated analysis associated with sustainable development.

6.18 Post-WSSD follow-up - Rio+15

It is important that the momentum built up in the period leading up to the WSSD is carried through after the summit, particularly any follow up action on sustainability to which New Zealand is committed. The Parliamentary Commissioner for the Environment, therefore, intends to undertake a review of progress on sustainable development during 2006/07, and report his findings to Parliament.

6.19 Recommendations

Responsibilities for sustainable development policies and actions come under a range of Ministerial portfolios and local government functions in the environmental, social and economic areas. For this reason, where a recommendation refers to the need to coordinate policy in all three areas, it has been directed to the Prime Minister. In other cases, recommendations have been directed to the relevant Minister or Ministers, or to local government.

Vision and framework for sustainable development

1. That, as part of the development of the proposed New Zealand Sustainable Development Strategy, the Prime Minister develops a range of policy, legislative, economic and voluntary measures designed to progress the implementation of sustainable development. These measures should include:
   a. a position (or vision) statement outlining the goals and objectives of the Government's policy on sustainable development
   b. a timeline for meeting objectives and measurable targets
   c. a timeline and processes for reviewing the position (or vision) statement and associated goals and objectives
   d. adoption of Agenda 21 principles into current and future environmental, economic and social legislation reviews.
2. That the Minister of Local Government, in consultation with Local Government New Zealand, develops guidelines for local authorities on preparing long-term community plans dealing with environmental, economic, social and cultural sustainability, as proposed under the Local Government Bill. Such guidelines should be consistent with the principles of Agenda 21.

Implementation, monitoring and review of sustainable development

3. That the Prime Minister should establish an advisory body responsible for overseeing and coordinating the implementation of the Government's proposed New Zealand Strategy on Sustainable Development, including:
   - actively promoting activities and education programmes that will increase public awareness of sustainable development
   - reviewing government departments' performances in working individually and collaboratively to meet sustainable development goals and objectives
   - providing support and guidance to local government and non-government organisations to ensure effective implementation of sustainable development at the local community level
   - encouraging sustainable development initiatives and partnerships among central and local government, private sector and non-government organisations
   - reviewing sustainability research priorities, capacities to undertake it and mechanisms for the application and adoption of the research.
   - monitoring, reviewing and reporting on progress towards sustainable development goals and objectives.
   - encouraging local authorities to regularly review and report on the effectiveness of resource management policies and plans, as well as the proposed long-term community plans under the Local Government Bill, in achieving the goals and objectives of the proposed New Zealand Strategy on Sustainable Development.
4. That the Minister of State Services, in consultation with the Minister of Local Government and Local Government New Zealand, identifies the capacity and capability issues associated with implementing sustainable development, and introduces methods to improve skills in integrating environmental, social and economic policy analysis and implementation.

[1] Unlike 'private goods', which are typically traded in a market and the ownership and use of which can be transferred making them excludable and rival, 'public goods' are non-excludable and non-rival in consumption. It would be extremely difficult, costly and highly inefficient to limit their use to only a few persons. Examples of public goods (or services) include street lighting, traffic lights and clean air.

Appendix 1

The Rio Declaration and Agenda 21

The Rio Declaration on Environment and Development: the principles of Agenda 21

Principle 1

Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Principle 2

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Principle 3

The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

Principle 4

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Principle 5

All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.

Principle 6

The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.

Principle 7

States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Principle 8

To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

Principle 9

States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

Principle 10

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Principle 11

States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.

Principle 12

States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

Principle 13

States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by

activities within their jurisdiction or control to areas beyond their jurisdiction.

Principle 14

States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.

Principle 15

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Principle 16

National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

Principle 17

Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

Principle 18

States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.

Principle 19

States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

Principle 20

Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.

Principle 21

The creativity, ideals and courage of the youth of the world should be mobilised to forge a global partnership in order to achieve sustainable development and ensure a better future for all.

Principle 22

Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognise and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

Principle 23

The environment and natural resources of people under oppression, domination and occupation shall be protected.

Principle 24

Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.

Principle 25

Peace, development and environmental protection are interdependent and indivisible.

Principle 26

States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.

Principle 27

States and people shall cooperate in good faith and in a spirit of partnership in fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development.

Appendix 2

A Stocktake of New Zealand's Environmental Management

A2.1 Framework for the stocktake

The first step in reporting this stocktake is to define its boundaries. Chapter 1 explained the rationale for the decision to base the 'looking-back' part of this report primarily on the substantive reports produced by the Commissioner on key issues that are relevant to Agenda 21 since the UN Earth Summit in Rio de Janeiro in 1992. The key issues assessed in this stocktake are covered in Sections A2.2, A2.3 and A2.4. By applying this filter to the more extensive range of PCE reports, both in terms of time (excluding reports prior to 1992) and subject matter, some reports that would be relevant to a full assessment of New Zealand's environmental management performance will not be included.

Therefore, this is a review of aspects of environmental management relative to sustainable development rather than a comprehensive analysis of environmental management in New Zealand since Rio. That is a different task and one that is undertaken from time to time by OECD reviews (OECD, 1996). Also, since the major PCE investigations invariably originate from a perspective that there may have been an adverse impact on the environment,[1] the reports used for this stocktake do not identify all the positive developments in environmental management that have occurred over the last decade. These will doubtless be covered in the New Zealand country report to the WSSD. Nor should it be assumed that the absence of a particular issue, land use change impacts, climate change or transport policy, for example, indicates an absence of concern. It indicates that the Commissioner has not investigated that issue so far, for reasons of resourcing, priority or timing. The Commissioner acknowledges that trends and changes in these issues will be fundamental to New Zealand's sustainability in the future. The

final, and perhaps the most important caveat is that, given the role of the Commissioner as defined by the Environment Act 1986, this stocktake focuses on the environmental aspects of sustainable development while acknowledging that sustainable development must, of necessity, be integrated with social and economic objectives.

A2.2 Management of major ecosystems

The grouping of subject categories in this section follows the format used by the Secretary-General of the United Nations in his report of December 2001, Implementing Agenda 21.[2] The UN report grouped the equivalent 'stocktake' topics under two chapters entitled Protecting the Integrity of Life-Supporting Ecosystems and Sustainable Consumption and Production. In the UN report, the chapter Ecosystems covered integrated land management, forests, oceans, freshwater resources, atmosphere and climate and impact of natural disasters. The chapter, Consumption/Production covered energy and transport, industry and tourism. Most of these topics have been the subject of investigations by the Commissioner as the following sections make clear.

In subsections A2.2 and A2.3, the stocktake will first review, for each topic, the major changes with respect to legislation, the development of strategies, policies and priorities and outcomes since the Earth Summit. For each topic the progress that has been made in establishing an effective institutional framework for sustainable development is then summarised. The institutional response is important because legislation is enforced through institutions and policy decisions are delivered by institutions. In short, whether institutions are formal or informal, social or economic, small or large, they "are the means by which we collectively pursue goals" (Dovers, 2001). The nature, capacity and performance of our institutions is therefore a key consideration in examining performance in environmental management. The performance of institutions is central to progress, or lack of progress, towards ecologically sustainable development. This section of the stocktake examines the institutional response by agencies with responsibilities for environmental management. Section A3.4 looks at how obligations to tangata whenua with respect to environmental management have been met. This is followed by New Zealand efforts to measure progress towards sustainability before presenting a summary of the stocktake in Section A2.6.

A2.2.1 Land and resource management

The Resource Management Act (RMA) became law in August 1991, replacing more than 150 other laws and regulations. Its passage into law was preceded by a well funded, intensive and extensive process, called the Resource Management Law Reform (RMLR), that was tasked to explore new approaches to resource management, influenced by concepts of sustainability as well as by ideas of efficiency and accountability. There was extensive public and sectoral consultation before the Resource Management Bill, the most significant overhaul of environmental legislation in New Zealand's history, was introduced in Parliament.

The purpose of the RMA is 'to promote the sustainable management of natural and physical resources'. The Act specifies a variety of additional matters that must be recognised and provided for by those exercising functions under the Act. These include 'matters of national importance' and the relationship of Maori and their culture and traditions with their ancestral lands, water, sites and spiritual beliefs. The RMA establishes a planning framework consisting of a tiered hierarchy of documents that match the tiered structure of local government.

The central tier of government may prepare national policy statements, national environmental standards and national regulations. To date, the only national policy statement[3] is the New Zealand Coastal Policy Statement, although work commenced in 2001 on a national policy statement on biodiversity. Each council at the

regional tier of local government is required to prepare a regional policy statement (RPS). An RPS must not be inconsistent with any national policy statement. Each RPS then leads to the preparation of one or more regional plan to help regional councils to carry out their functions. The third tier of territorial authorities (such as city councils) must produce at least one district plan which must not be inconsistent with any national policy statement, nor regional policy statement or regional plan(s) for the region within that district is located.

Given the magnitude of the changes introduced by the RMA it was natural that the emphasis of several PCE investigations on resource management issues in the 1990s would focus on assessing the effectiveness of the RMA. In reviewing the implementation of the RMA the Commissioner concluded that it had improved the potential for integrated land use management and assisted the participation of people and communities, including tangata whenua, in the environmental management of their areas (PCE, 1998e). As law, the RMA has its limitations, however, with regard to sustainable development. Its purpose - sustainable management - is more narrowly defined than sustainable development. That the RMA was only addressing a sub-set of sustainable development actions was recognised in the legislative phase (Young, 2001). The Commissioner made a similar observation in 1998, "If we do want to move towards more sustainable development, then the RMA is only one of a number of pieces of legislation that can or should contribute to this goal." (PCE, 1998e). In addition, the RMA does not effectively address questions of the efficiency of resource use, which is a basic precursor to sustainable development (MFE, 1997; PCE, 1998e).

While the legislation is quite justifiably regarded as innovative and far-reaching, its implementation was inadequately supported by central government. A strategic weakness identified by the Commissioner and others (e.g. Ericksen et al., 2001) was that the concept of sustainable management set out in the RMA did not appear to be well understood. The same can be said today about the poor appreciation within New Zealand of the wider concept of sustainable development (see chapter 4). The legislative approach to promoting sustainable management in New Zealand has been reactive, although the local government reforms may change this with respect to the role of local government. The RMA is based mostly on managing environmental effects. This is rather than being about using environmental performance targets or articulating visions to improve the nature and efficiency of resource use in line with ecologically sustainable development.

In 1998, the Commissioner noted that the extensive criticism of the RMA had largely been about process (time and cost issues relating to resource consents) while "the merits of advancing sustainable development and improving environmental management appear to be largely forgotten" (PCE, 1998e). There has been little guidance from central government, for example, in the form of national policy statements or national environmental standards, that could have been expected to address a number of these problems. Only recently has attention been given to the quality of environmental outcomes.

A2.2.2 Institutions for resource management

The institutions responsible for implementing the RMA are primarily the various structures of local government (regional councils, territorial authorities and unitary authorities[4]) although their capacity to do so is significantly influenced by the level of support and guidance they receive from central government.

A joint study by the Commissioner and Auditor-General (PCE & Controller & Auditor-General, 1999) of local government models (regional and territorial authorities/unitary authorities) indicated that all of these models were capable of delivering integrated environment management

under the RMA provided the chosen model incorporates a range of key features which characterise an effective environmental management system. **The major finding to emerge from this study was that the form of the model adopted by local government to deliver outcomes is less relevant than other factors. An important determinant of the perceived effectiveness was a council's ability to achieve its stated environmental outcomes. Key factors were flexibility and having an integrated approach to environmental management.**

The Key Features for a Local Government Environmental Management System

1. Integrated management

- facilitate appropriate internal structures and processes
- manage external relationships
- think strategically. This includes having a long-term strategic approach; commitment to taking a leadership role; a region-wide perspective; willingness to use education to achieve environmental outcomes.

2. Environmental outcomes

- a strategic focus and commitment to environmental outcomes
- a commitment and a capacity to monitor effectiveness in achieving outcomes
- an organisational structure and capability to understand, monitor, analyse and report on progress.

3. Separation of functions

- a commitment to give appropriate effect to statutory requirements
- the clear separation of regulatory from service delivery functions
- transparent decision-making processes
- coordinated management of operational and service delivery activities.

4. Interactions with the public

- easy public access to services and information
- high level of responsiveness to public concerns
- public awareness of the council's role
- public trust and confidence in service delivery and decision-making processes.

(PCE and Controller and Auditor-General, 1999.)

Although the different models may be satisfactory, implementation of the RMA has not lived up to expectations in the following areas:

- There are not enough joint formal arrangements for cross-boundary issues or management of shared resources (PCE & Controller & Auditor-General, 1999).
- Integration by regional and territorial authorities in implementing the RMA[5] is poor (PCE, 1998e).
- There is no national guidance on a consistent approach to local government environmental outcome setting and evaluation (PCE & Controller & Auditor-General, 1999).
- There are insufficient checks and balances and a lack of accountability of some councils in fulfilling their responsibilities under the RMA (PCE & Controller & Auditor-General, 1999; PCE, 1998c; PCE, 2001d).
- There is inadequate attention to, and management of, cumulative effects (PCE, 1995; PCE, 1998a; PCE, 2001d).
- Monitoring and enforcement is often given a low priority (PCE, 1995).

As well as little guidance for councils from central government there has been little research and information assistance to local government. One significant shortcoming, given the highly urbanised nature of our society, is the absence of an institution with a focus on carrying out research into urban environmental issues (PCE, 1998a). In an effort to improve regional and district plans a website to promote best practice in the development of plans under the RMA was established in 2001.[6]

Despite the initial promise and benefits that the RMA brought at a conceptual level, the RMA planning framework is still not fully in place after ten years. Although 76 regional and district plans are operative, some 77 regional and district plans are still in the process of being made operative (MFE, 2001b).

A2.2.3 Marine environment

The Commissioner investigated the management of New Zealand's marine environment in 1999 (PCE, 1999b). This investigation followed an earlier joint study by the Commissioner and the Controller and Auditor-General on marine fisheries management (Controller and Auditor General and PCE, 1990). The 1990 study concluded:

> *The findings in this report indicate a system struggling to provide the necessary information for management decisions which can control fishing at sustainable levels and ensure sustainability of the fishery resource.*

Nine years on, the Commissioner's (PCE,1999b) wider investigation of the management of New Zealand's marine world outlined "a picture that is full of opportunity, yet deeply disturbing in its limited effectiveness and capacities to date."

At the legislative level the conflicting statutory mandates between legislation such as the RMA and the Fisheries Act 1996 is part of the problem of a system for managing the marine environment that remains arbitrary and complicated, with overlapping and fragmented management responsibilities. There are 18 main statutes, 14 agencies and six government strategies for marine management. The legislation has established different priorities for management, ranging from protection to utilisation, from the coastal marine area out to the boundary of the Exclusive Economic Zone (EEZ). In some cases the framework is incomplete.

The Commissioner emphasised the importance of taking a 'whole systems' approach to the reality that the marine world is a mosaic of complex ecosystems, despite the dominance of fishing and fishing practices in discussions about marine management issues. Marine management systems must recognise the complex, variable nature of the marine environment. Hence the Quota Management System (QMS), while it is a significant improvement over pre-1986 fisheries management, does not equate with sustainable management of the marine environment as a whole. In addition, even with the QMS, shortcomings in knowledge, both of key stocks and their component ecosystems, has led to serious declines of some stocks and concerns about the underlying rationale for their management. Risks to sustainable utilisation of fisheries were identified in the Environment 2010 Strategy (MFE, 1994).

There are also related problems with the fisheries management rights regime. It is immature and poorly integrated with other rights. It therefore cannot ensure sustainable management of the resources. There are significant difficulties in trying to mesh a property rights framework for fisheries management onto a very diverse 'public good' management framework for managing the marine environment. Some of these conflicts are being addressed by current Government initiatives with respect to proposed changes to the RMA, Fisheries Act 1996 and Marine Reserves Act 1971. There has also been rather belated recognition of the significant economic and environmental risks posed by invasive alien species in the marine environment. These risks are now being considered as part of the development of a biosecurity strategy for New Zealand (see section A2.2.7).

On a more positive note, the Commissioner's report (PCE, 1999b) also concluded that there had been constructive initiatives by Government and by communities to work towards sustainable marine practices. They include: the establishment of the QMS in 1986, the establishment of taiapure and mataitai, and the conservation services levy in fisheries management. Numerous community 'care' groups have been established in coastal areas and educational initiatives aim to increase understanding of the marine environment.

The major recommendation by the Commissioner was for the establishment of a Coastal and Oceans Task Force to develop a strategy with goals and principles, then actions and policies, for the future sustainable

management of New Zealand's marine environment. In October 2000, the Government initiated the development of an Oceans Policy through a three-stage process that may well lead to a mix of policy and legislative initiatives that improve the current practices concerning the use and protection of the marine environment. The urgent need for such initiatives and reforms has been clearly articulated.

The Ministry of Fisheries is in the process of preparing a Fisheries Environmental Management Strategy.[7] The strategy is designed to contribute to the Ministry's strategic intent - sustainable fisheries in a healthy aquatic ecosystem. It is intended that the strategy will provide a vision and overall approach by which the Ministry of Fisheries will align and improve its processes to meet fisheries-related environmental obligations. The strategy is due to be completed by October 2002.

A2.2.4 Institutions for marine management

With respect to management of the marine environment, the Commissioner's 1999 investigation concluded that the institutional structures fail to reflect the complexities of, and the interconnections within, the natural, cultural and economic systems that require management (PCE, 1999b). This reflects the lack of an overarching framework or strategy to guide the many stakeholders towards sustainable management of the marine environment. Instead, the management structures are narrowly compartmentalised and focus on outputs rather than outcomes. In addition to structural barriers, the Commissioner's investigation concluded that the lack of communication and a "grave lack of trust" between stakeholders is severely inhibiting the advancement of sustainable management of the marine environment.

For marine matters beyond the 12-mile limit there are many agencies and many Acts involved, but no lead agency and a perceived lack of coordination in legislation. Procedures for environmental management beyond the 12-mile limit are not consistent with procedures inside the 12-mile limit (PCE, 1996a). The planning stages of off-shore developments provide no opportunities for public comment and once the marine protection rules are promulgated, in general, there are no consultation procedures. The lack of a lead agency for matters beyond the 12-mile limit makes it more difficult to coordinate consultation or conflict resolution.

The Oceans Policy initiative, referred to in section A2.2.3, provides an important opportunity to take a holistic view of the major strategic issues regarding marine management and define a coherent system, which will require addressing the institutional problems.

A2.2.5 Biodiversity

In the last decade there have been major additions to our national parks system. Kahurangi National Park was opened in 1996 and Rakiura National Park on Stewart Island was opened in 2002. These two new parks alone add 600,000 hectares to the national park system. In May 2001, the Government transferred 130,000 hectares of indigenous forest lands on the West Coast to the management of the Department of Conservation. These publicly-owned forests were previously managed for timber production by Timberlands West Coast. Government has signalled its intentions to consider adding significant portions of these forests to existing national parks. In addition, World Heritage status was granted to New Zealand's Sub-Antarctic Islands in 1998.

Although a significant proportion of New Zealand's biodiversity is protected on public conservation lands there is also considerable biodiversity of value on private land. The Government established a Ministerial Advisory Committee on Biodiversity and Private Land in 1999 which presented its final report in August 2000 (MFE, 2000). This committee arose out of two concerns of Government. The first was that

biodiversity was continuing to decline and private land was playing a part in that decline. The second was that there had been adverse reactions to attempts by a number of councils to protect biodiversity on private land. In some places it had come to the point that polarized positions threatened to undermine goodwill and any benefits that might have been expected. The report concluded that biodiversity should be managed at the regional or local levels with central government putting in place the structures (including funding mechanisms) needed to assist local government to effectively address biodiversity issues. This requires central government to work in partnership with local government. Further efforts were signalled as being needed if Maori interests in biodiversity were to be secured.

The completion of the New Zealand Biodiversity Strategy in 2000 provides the necessary framework, combined with a Biosecurity Strategy (under development), to significantly advance priorities for, and better integration of, the protection and enhancement of biodiversity. The Biodiversity Strategy has effectively replaced the previous Government's Environment 2010 Strategy that was released in 1994 (MFE, 1994a). In the 2000 Budget, the Government committed an additional $187 million over five years to implement priority actions in the Biodiversity Strategy. Some of this money was to assist biodiversity conservation on private land as a consequence of recommendations from the Ministerial Advisory Committee (MFE, 2000).

In 2002, DOC published a summary of achievements during 2001 under the Biodiversity Strategy (Department of Conservation, 2002). Half of the additional $18 million spent in 2000/01 under the strategy actions was on weed and pest control and related initiatives including $1.6 million on marine biosecurity initiatives. Funding is projected to increase in each of the next four years. An additional $30.5 million is targeted for spending to increase the protected areas on private land over the five year period. This recognises the importance of conserving valued indigenous biodiversity on private land.

Neither the Biodiversity Strategy, nor the Biodiversity on Private Land project directly tackle issues surrounding future roles for native plants on private land other than for protection purposes. Questions regarding the ecologically sustainable uses and services of native trees and plants in the landscape and how these might contribute to biodiversity goals were not addressed in either document. These important and sometimes contentious issues were raised in a separate PCE discussion paper in June 2001 (PCE, 2001h). Submissions to the paper have been analysed and the Commissioner published a final report with recommendations in June 2002.

In 2001, the Government started the process of developing a national policy statement on biodiversity under the RMA during 2002. This initiative provides a further opportunity to bring national consistency in the approach of local government to the management of indigenous biodiversity outside public conservation lands. There had been widespread expectation that a number of national policy statements would be prepared under the RMA after its 1991 passage, but by 2001 only the mandatory Coastal Policy Statement had been prepared. The Resource Management Amendment Bill, currently before Parliament, is intended to clarify biodiversity management functions of regional councils and territorial authorities.

A2.2.6 Management framework for biodiversity

About one-third of New Zealand's land area is managed by the Department of Conservation (DOC) which has a diverse but integrated set of functions including research, pest control, protecting endangered species, management of visitors and conservation areas, including national parks. The area under national park status for which the DOC is responsible has expanded

significantly in the past decade (section A2.2.5). This has placed more demands on departmental resources. Over the past decade the Commissioner has not initiated any investigations into the institutional framework for the management of public conservation lands.

With respect to other lands, regional councils have responsibility under the RMA for functions such as pest control, air and water quality, and managing tourism impacts.

As was covered in the previous section, there is significant indigenous biodiversity of value on private land. Late in 2001, the Government launched a nation-wide initiative, Action-Biocommunity, funded by the MFE Sustainable Management Fund and managed by Local Government New Zealand. The focus of the project, which has a modest budget of $1.1 million over three years, is to build capacity in local government for biodiversity management. It is intended to build on many existing projects and help coordinate biodiversity work across local government organisations as well as linking with efforts at the community level.

A2.2.7 Biosecurity

In the past decade the most significant new legislation relevant to terrestrial biodiversity has been the Biosecurity Act 1993 and the Hazardous Substances and New Organisms (HSNO) Act 1996. Both Acts focus on biosecurity aspects of threats to biodiversity.

The focus of the major biosecurity investigations by the Commissioner during this period has been on environmental management of pests (invasive alien species) that threaten indigenous biodiversity. Three reports have looked specifically at aspects of management of New Zealand's most costly pest, the Australian brush-tailed possum (Trichosurus vulpecula) (PCE, 1994b; PCE, 1998g; PCE, 2000d) and a fourth looked at biosecurity failures associated with the illegal introduction of rabbit calicivirus disease (PCE, 1998f). A much broader investigation into the management of biosecurity risks in general was completed in 2000 (PCE, 2000c).

Possums are a major threat to rata/kamahi and mixed hardwood forests through defoliation, competition pressure, in addition to predation on native birds. Since the 1970s possums have also been identified as vectors for bovine tuberculosis (Tb). These serious problems with possums are unique to New Zealand. (Direct economic losses from possum damages could reach $US25 million per year (PCE, 2000d)). The PCE investigation of 1994 arose from public concerns over the widespread aerial application of Compound 1080 (sodium monofluoroacetate) for control of possums. The investigation's findings supported the ongoing use of 1080 while warning against the heavy reliance on 1080, or other toxins, in the long term. The best hope for future control was thought to be a breakthrough in biological control or similar technology. A progress report (PCE, 1998g) concluded that most of the recommendations in the 1994 report had been implemented, namely there was much better coordination between the research establishment and control agencies, while agencies had also standardised the monitoring of their control operations.

Conflicting attitudes to biological control of pests were starkly exposed during 1996-1997 in relation to another major pest, the rabbit. A substantial application by regional council, farmer and central government interests to import rabbit calicivirus disease (RCD) as a biological control of rabbits was declined in July 1997 by the Director-General of the Ministry of Agriculture and Forestry (MAF). During the following month, August 1997, dead rabbits were found on several Otago farms and it quickly became apparent that there had been an organised illegal importation and release of the RCD virus that probably occurred before the official 'No'" decision had been released.

In the fallout that followed the Commissioner (PCE, 1998f) concluded that given the history and context of rabbit bio-control in New Zealand the

illegal importation of RCD had been "highly predictable". It seemed clear that when lots of players are involved in making a decision on biosecurity then the context will be a major influence on the outcome. (In this case the 'context' included important historical and research initiatives to develop and introduce bio-control measures for rabbit control.) It also led the Commissioner to a broader conclusion that:

> *Community acceptance of future bio-control agents necessitates public information and education sources that are trusted and independent of both proponents and agency decision-makers.*

The Commissioner also considered it was essential to undertake a detailed investigation of the impact of this failure in biosecurity and the factors that generated it, given concerns that it may have signalled a change in public attitudes towards biosecurity laws and diminished trust by the public in decision makers. The Biosecurity Council reviewed the 'lessons learned' from the RCD events. Its public report (Biosecurity Council, 1999) contained a number of conclusions and recommendations. It noted that numerous communications failures had occurred, there had been a lack of clear policy guidelines at the political level, context is indeed important to decision making and better communication and coordination between key agencies was required. One of the most import generic problems that remained was the relative absence of ways to create an environment conducive to informed and open public debate. The Commissioner had expressed similar concerns.

The Biosecurity Council report also concluded that resourcing of the RCD 'episode' had been inadequate. The Council recommended that a rethink was needed with more flexibility (in funding) to enable more timely responses to unexpected biosecurity contingencies. This was not the first, nor the last time, that official inflexibility had been cited as an obstacle to the rapid deployment of resources against incursions of potentially serious and costly pests.

The polarised debates surrounding the RCD debate led the Commissioner to explore the interactions between science and communities in terms of views about a range of possum biocontrol options (on which many millions have been spent), most of which involve genetic engineering. The resulting report (PCE, 2000d) showed that there is wide public recognition of the need to deal effectively with possums and also acceptance that new control methods are needed. Interest in the possibilities of biocontrols was, however, tempered by deep concerns about genetic engineering (GE) on a number of fronts. A fundamental issue was the extent of the unknowns. The more general importance of acknowledging unknowns in science was developed in another paper by the Commissioner (PCE, 2001c). The earlier investigation showed that while there was support for ongoing research there were also enormous information needs relating to biocontrols and genetic science, and an insistence by many people that development of biocontrol technologies must include the full participation of the public, tangata whenua, and groups and sectors with an interest in biocontrol and genetic technologies (PCE, 2000d).

The Commissioner made recommendations regarding possum research, increased research into the interface between biocontrol technologies and New Zealand society and expanded education and community programmes about possum impacts and risks, as well as the practicalities of possum control.

A wide-ranging investigation by the Commissioner of the management of the biosecurity system was released in 2000 (PCE, 2000c). Its key message was that biosecurity is as strategically important as national security when it comes to protecting New Zealand's key economic and environmental assets. Government needs to accord it this level of strategic status. The investigation identified strategic, process and

operational strengths of the biosecurity system that make it a world-leader. Such comparisons, however, can be misleading and may lead to an unjustified complacency. New Zealand's needs are different, the stakes are uniquely high, and the performance standards need to be New Zealand specific.

The Commissioner's investigation identified strengths and weaknesses of the biosecurity system and then outlined a number of opportunities for its improvement. These were to:

- **develop numerous 'lines of defence' against unwanted organisms, including off-shore preventative measures**
- **broaden membership of the Biosecurity Council**
- **improve coordination and cooperation between agencies**
- **develop risk management principles**
- **strengthen monitoring**
- **set up surveillance research and intelligence systems, particularly in the Auckland region**
- **establish more partnerships**
- **develop a 'learning by doing' approach to management to improve operational success rates.**

A2.2.8 Biosecurity institutions

While there have been significant improvements over the past decade, both through new legislation and institutional structures, biosecurity is a risk management system operating without a clear set of measurable outcomes and it is administered by multiple agencies (in central government and local government) each with their own objectives (PCE, 2000c).

The formation of the Biosecurity Council in 1997 as a Ministerial advisory body was a significant step towards better coordination of the agencies involved in managing biosecurity risks. Under the umbrella of the Biosecurity Council a number of consultative forums have been established. These provide a potentially useful mechanism for various interests to raise their concerns about biosecurity issues and convey them to the Biosecurity Council.

The establishment of the MAF Biosecurity Authority in 1999 was another important milestone. There remain questions over the relative amounts of resources that are directed to biosecurity activities covering indigenous species and native ecosystems compared with the funding directed to protecting land-based industries. Biosecurity funding is overwhelmingly directed to the Ministry of Agriculture (over 90%), while the Department of Conservation, the Ministry of Fisheries and the Ministry of Health share less than 10%.

At the time of writing the development of a Biosecurity Strategy for New Zealand was still in progress. A draft strategy is due for release and comment in June 2002 with a target for Government approval of a final strategy in December 2002. It is not possible to speculate at this time if it will recommend any changes to either biosecurity legislation and policies, or to the institutional arrangements that deliver biosecurity services. The Commissioner's investigation clearly identified improvements that could be made to all of these aspects of the biosecurity system.

A2.2.9 Urban environments

New Zealand is now a highly urbanised society with over 85% of the population living in urban or suburban environments. (The global average for all countries is 50%.) The successful management of its cities can be seen as a challenge to achieve sustainable urban development, recognising that cities are, in effect, very complex, highly managed ecosystems. **The first PCE investigation of the management of the urban environment (PCE, 1998a) found that:**

> *With a few notable exceptions at the city level, the concept of sustainable urban development is largely being ignored in New Zealand, with a lack of leadership and vision.*

Several indicators of resource consumption (housing, energy, transport, goods and services), as well as waste production, are rising faster than rates of population growth. The report points out that effects-based management, as guided by the RMA, does not address the nature and efficiency of resource use (PCE, 1998a). Increased efficiencies will bring substantial cost savings to businesses, the wider community and government. The Environment 2010 Strategy (MFE, 1994) only sporadically covered urban issues which exposed a policy vacuum with respect to urban ecosystems. More recently, the otherwise comprehensive The State of New Zealand's Environment publication (MFE, 1997) does not adequately address urban sustainability issues, a trend that has continued into the environmental indicators programme run by the Ministry for the Environment. Sustainable development of New Zealand's urban environments has been plagued by a lack of vision, a lack of agency coordination, a lack of concern ('urban denial'), little urban research and a history of many (small) starts but few finishes. In March 2002, the Ministry for the Environment published a design guide for urban New Zealand providing a broad overview of urban design processes and principles (MFE, 2002b). The Ministry also commissioned work in 2000/01 on the identification and management of urban amenity values, but the findings from this study have not yet been published.

The RMA has insufficient emphasis on issues relating to the health and well-being of people and communities, although its provisions relating to amenity values and the interactions between development and the environment are essential. A major challenge exists at all levels of government to find new and creative ways to inform and empower communities, to involve them in decision making, and to enable them to make choices in an efficient and effective way. A significant challenge for New Zealand will be decoupling future increases in our quality of life (well-being) from increasing resource consumption and waste production.

Historic and cultural heritage within the urban environment provides a range of benefits including reinforcement of New Zealand's unique identity and provision of economic opportunities. **A PCE investigation into historic and cultural heritage management in New Zealand found that the government system was performing poorly and permanent losses of all types of historic and cultural heritage were continuing** (PCE, 1996b). Recommendations included: establishing a specific ministerial portfolio for historic and cultural heritage; developing a national heritage strategy; and addressing the protection of Maori heritage. A number of changes have since occurred including a review of funding of core statutory heritage functions, the establishment of a Ministry of Culture and Heritage in 1999 and the inclusion in the current RMA amendment bill of proposals to elevate the protection of historic and cultural heritage to being a matter of national importance. However, no progress has been made on the development of a strategy to coordinate and integrate heritage management better across all levels of government.

A more recent investigation by the Commissioner into sustainable development in peri-urban areas (defined as areas that are in some form of transition from strictly rural to urban) identified a related suite of issues (PCE, 2001d). Environmental management and planning of peri-urban areas is complex, but the quality of long-term outcomes from six case studies showed that adequate inputs sometimes led to acceptable outputs. Inadequate inputs and processes led to inadequate outputs. Over-reliance on the RMA (via district plans) as the primary tool was common, but led to problems in managing cumulative effects, which is a critical issue. The tools to define and manage cumulative impacts are weak. Accountability in the system is weak, checks and balances are limited and are not activated very often. Baseline resource information is not particularly good and many communities feel there has been poor leadership from national agencies on how to

manage these areas. Institutional capacity to promote the sustainable development of the peri-urban areas, both intellectual and financial is variable.

The peri-urban investigation raised more questions than answers. It is clear that communities value a 'sense of place', but it is unfortunately not clear which of the various approaches that have been tried around the country will lead to sustainable development of peri-urban areas. Is the current system of environmental management and planning actually capable of promoting the sustainable development of peri-urban areas? The report identified key questions. Are the planning processes effective? Is the planning process adequate? What is the role for communities? Where do we go from here?

The Commissioner's sole recommendation was that the Minister for the Environment *"undertake a substantive review of experience to date in preparing the first-generation plans produced under the RMA."* The purpose of the review would be to ensure that lessons are available for the preparation of the next generation of plans which should improve both the implementation of the RMA and the likely environmental outcomes. It is recommended that the review be done in partnership with local government and identify solutions.

In 2000, the Commissioner issued a discussion paper on urban water systems (PCE, 2000a) and the following year produced a report with findings and recommendations (PCE, 2001a). In New Zealand, as in other countries, the management of water is complex and of major strategic importance. The investigation, discussions with many stakeholders and feedback via submissions clearly showed that advancing water management "is primarily a socio-political challenge rather than an economic or technical one."

Four major areas of challenge were identified. These challenges identified the areas where substantive action is needed, namely, the currently fragmented framework for the management of urban water systems; stakeholder awareness, concerns and understanding; valuing, pricing and charging for water services; and replacing the existing outdated management approach by one that integrates the management of urban water systems. **The Commissioner recommended that a Ministerial Task Force be established to develop recommendations relating to the above four areas of challenge. The Commissioner also recommended that all territorial authorities and water services providers prepare an overarching water services strategic plan as a framework for the sustainable and integrated management of urban water systems.** While Government has not proceeded with the recommendation for a Task Force, the current local government reforms do address the need for integrated management of water, wastewater and stormwater in an ecosystem context.

Following a review of the Local Government Act 1974, the Local Government Bill was introduced in December 2001. Among the changes proposed is a change to the purpose of local authorities:

> *The purpose of local authorities is to enable local decision-making, by, and on behalf of, individuals in their communities, to democratically promote and action, their social, economic, environmental, and cultural wellbeing in the present and for the future (Clause 8).*

Other changes include the introduction of comprehensive long-term community plans with their emphasis on integrated decision making. Such plans are likely to complement regional and district plans under the RMA, and provide for the wider economic and social planning aspects not fully covered in the environmental focus of RMA plans.

A2.2.10 Urban institutions

With a few notable exceptions (see section 4.1.7 for examples of positive actions by various councils), the institutions responsible for

promoting and implementing sustainable development of urban environments in New Zealand (regional councils, unitary authorities and territorial authorities) have little to show for their efforts over the past decade (PCE, 1998a). This is despite the clear guides for action laid out in Local Agenda 21[8] and the initiatives of many overseas cities to manage their urban areas more sustainably. In 1994, the Ministry for the Environment produced an Agenda 21 implementation guide for local authorities (MFE, 1994b) and formed a trial partnership with the then Local Government Association and five local authorities (Waitakere, Wellington, Nelson, Tasman and Waimakariri). Since then, there has been little national leadership, promotion or coordination of local Agenda 21 initiatives and no national strategy for the implementation of Agenda 21.

There is no national urban agency that can provide information on urban sustainability issues and thereby assist local government with management of the urban environment. The abolition of the New Zealand Planning Council in 1991 removed one agency that could have carried the responsibility for the broader social, cultural and economic aspects of environmental policy, including concerns relating to the urban environment (Memon, 1993).

A2.3 Consumption and production

A2.3.1 Energy

Energy plays a pivotal role in modern societies. Recognising New Zealand's poor performance relative to other OECD (Organisation for Economic Cooperation and Development) countries in terms of energy efficiency, renewable energy policy and implementation of new technology, the Commissioner undertook a review of progress of energy efficiency and renewable energy initiatives (PCE, 2000b). Coming at the end of a decade noted for a considerable number of Government and agency reports on energy efficiency and renewable energy issues, the report concluded that the most important issue was the need for strong Government leadership to fully address energy efficiency, renewable energy and demand management issues in the energy and transport sectors. This will need to occur in partnership with all sectors, particularly industry, business and local government.

In 1996, the OECD's environmental performance of New Zealand contained a number of recommendations on the energy sector and energy efficiency initiatives. In 1997, the International Energy Agency (IEA) also reviewed New Zealand's energy policies (IEA, 1997). Both of these reviews had identified a clear role for Government with the IEA stating that "energy efficiency is a top priority in moving to a sustainable energy system." The Commissioner energy report concluded that in response to international agency recommendations and an analysis of Environment 2010 actions, little progress had been made in a large number of areas concerning energy efficiency and renewable energy. All agencies had paid insufficient attention to renewable energy issues and energy efficiency issues associated with the transport sector. Lack of action, despite the extensive analyses that had been done (14 major reports) suggest that deep ideological debates have impeded and ultimately constrained Government investment and willingness to sign off on policy initiatives.

When the Energy Efficiency and Conservation Authority (EECA) was established in 1992 officials had recommended that it be established as a separate entity by legislation. This did not occur. **Despite its satisfactory performance to date, the Commissioner recommended that Government establish a Government-supported energy efficiency and renewable energy agency as a separate entity with policy and operational roles, based on legislation.** The structure prior to the Energy Efficiency and Conservation Act 2000, put EECA outside the official Government policy loop. This meant that Government could not be confident it was receiving the full range of options

and possible responses regarding energy efficiency and renewable energy policy advice. That situation has now changed.

The Commissioner also called for a new national energy efficiency and renewable energy strategy by Government to replace the 1994-1997 energy efficiency strategy that was produced, but not renewed. The Energy Efficiency and Conservation Act 2000, the product of a private member's Bill to Parliament in 1998, was enacted three months after the PCE's energy report. The purpose of the Act is to promote energy efficiency, energy conservation and the use of renewable sources of energy. It also establishes 'sustainability principles' to achieve the purpose of the Act. These principles require those who exercise responsibilities, powers or functions to take into account the health and safety of people and communities, their social, economic, and cultural well-being, the need to maintain and enhance the quality of the environment, the reasonably foreseeable needs of future generations and the principles of the Treaty of Waitangi.

The Government released a draft National Energy Efficiency and Conservation Strategy (NEECS) in early 2001 as one of the requirements of the Energy Efficiency and Conservation Act 2000. The strategy was finalised and released by the Minister of Energy in September 2001. One urgent priority for the strategy to address will be transport energy efficiency issues. Transport energy use grew 3.5%, on average, from 1999-1999 and domestic transport accounts for 42% of New Zealand's total energy use.[9] Progress is needed urgently on providing more balanced transport solutions, addressing the environmental effects of transport patterns on energy use and sustainable land use, and better efficiencies of transport fuel. These and other energy efficiency targets are key parts of New Zealand's response to climate change.

The Commissioner's energy report (PCE, 2000b) also examined the energy reforms and the role and structure of the market. It concluded that explicit consideration of both economic and environmental (resource) efficiency is needed in the development of energy policy. The development of such policy needs to acknowledge that market mechanisms cannot deliver all objectives, and that environmental efficiency criteria need to directly shape policy development. The energy reform process emphasised supply side matters. There is also a need to build energy efficiency and demand side management into the existing market.

The amendment in 2001 to the Electricity Act 1992 requires the PCE to undertake a regular environmental performance audit of the Electricity Governance Organisation against the environmental criteria in the Government Policy Statement of December 2000. This policy statement was issued following consideration of the recommendations of the Ministerial Inquiry into the Electricity Industry. The Government Policy Statement includes the following policy objective:

> *The Government's overall objective is to ensure that electricity is delivered in an efficient, fair, reliable and environmentally sustainable manner to all classes of consumer.*
>
> *The policy statement also defines the guiding principles for the electricity industry as being:*
>
> *The Government's overall objective is to ensure that electricity is delivered in an efficient, fair, reliable and environmentally sustainable manner to all classes of consumer. Industry arrangements should promote the satisfaction of consumers' electricity requirements in a manner which is least-cost to the economy as a whole and is* ***consistent with sustainable development*** *(emphasis added).*

Consistent with its overall objective, the Government policy statement then lists a number of specific outcomes that the Government is seeking. These include:

- energy and other resources are used efficiently, and in particular, hydro spill is minimised
- greenhouse gas emissions are minimised.

The first step of the audit that the Commissioner is required to undertake is a draft audit framework, setting out the scope, objectives, criteria and measures to be used. This will be released by the Commissioner for public comment in late 2002.

A2.3.2 Energy agencies

In 1992, the year Government established EECA (Energy Efficiency and Conservation Authority), the Officials Committee on Energy Policy (OCEP) was also established. This Committee has the objective of overseeing and integrating advice to the Minister of Energy and the Cabinet Committee on Industry and the Environment. EECA was not represented on OCEP, but its technical advice was occasionally sought on energy efficiency issues. EECA has subsequently had some input into other policy processes where there was a recognised need for expertise in energy efficiency and renewable energy. A major focus for EECA in the late 1990s was to address and respond to an audit of its effectiveness and on-going governance review.

The Commissioner's report on energy efficiency (PCE, 2000b) raised concerns about EECA being a semi-autonomous body within the Ministry of Economic Development (previously the Ministry of Commerce), and recommended that EECA should have a more direct involvement in the development of energy policy. In May 2000, when the Energy Efficiency and Conservation Act 2000 was enacted, EECA was established as a Crown entity whose performance is monitored by the Ministry for the Environment (MFE). MFE provides policy advice to the Minister of Energy on energy efficiency, conservation and the use of renewable sources of energy.

A2.3.3 Waste

While societies generate many different sorts of waste, ranging from domestic to industrial outputs, a particularly important sub-set are 'hazardous waste' products. 'Hazardous wastes' generally present some degree of physical, chemical or biological hazard to people and the environment. The management of hazardous wastes was the subject of a number of public reports throughout the 1990s. The 1996 OECD review of New Zealand's environmental management (OECD, 1996) comprehensively criticised New Zealand's poor performance in waste management with respect to inconsistent policies between local authorities, lack of incentives, piecemeal approach, inadequate legislation, limited information, and lack of treatment and disposal facilities. The State of the Environment report (MFE, 1997) concluded that the scale of the hazardous waste problem was poorly understood, badly underestimated and prone to flawed management. Government had not addressed even the fundamental issue of having a legal definition of "hazardous waste".[10]

In 1998, the Commissioner established a process to monitor progress on the implementation of a three-year hazardous waste programme set up by the Minister for the Environment in September 1997 to improve the management of hazardous waste (PCE, 1998c). The Commissioner assessed progress in November 1999 (PCE, 1999a) and again in April 2001 (PCE, 2001b).

The first assessment found that delays had occurred and outcomes were not achieved within the expected three-year timeframe. The programme was extended to 2005, its scope broadened and it received additional funding. The Commissioner's second assessment in 2001 showed that reasonable progress had been made including the development of a draft definition of 'hazardous waste', the establishment of a database (the 'New Zealand Waste List') and the linking of the programme with other initiatives, such as waste acceptance criteria for landfills and a proposed waste minimisation strategy. Despite this progress, the broader goals of the Hazardous Waste Management Programme had not been achieved after three years. Evidence of improved systems or outcomes is unlikely now until 2005 or beyond. Fortunately, the Ministry for the Environment has clearly identified key milestones for the

programme and these will be useful for measuring the programme's progress and outcomes.

Another waste issue investigated by the Commissioner was mine tailings.[11] An investigation into the effects of tailings dams identified problems associated with liability for monitoring, maintenance and residual clean-up of sites used for the long-term storage of mine tailings from existing and proposed gold mining operations (PCE, 1997b). Amendments to the RMA to clarify responsibilities for the long-term management of environmental effects from such activities and other contaminated sites are currently under consideration by Government.

In his report on urban water systems (covered above in section A.2.2.9) the Commissioner pointed out the strong links between urban water systems, wastewater and waste management. He stressed the need for territorial authorities and water services providers to develop a water services strategic plan to recognise and address a range of cross-media issues such as the management of trade waste and the final disposal of end products from wastewater treatment (PCE, 2001a).

A2.3.4 Waste management

Local government has the primary responsibility for managing waste, including hazardous waste, either as a regulator (regional councils) or as a provider of services (territorial authorities or their contractors). This has been done for many years without any overall strategy or consistency of policies between local authorities. Nor have there been adequate incentives to reduce the amount of wastes that are generated. The Ministry for the Environment's responsibilities regarding waste include advising on national policy issues and consulting on and developing national guidelines or standards on waste management.

Consultation on waste management proposals has become more intense over the last few years, with the Ministry for the Environment releasing a number of technical and general discussion documents on hazardous waste, landfill acceptance criteria, waste minimisation and the management of waste oil. Part of the Ministry's process for developing hazardous waste management systems is to first trial the proposed New Zealand Waste List and draft definition of hazardous waste in selected local authorities (PCE, 2001b).

The new New Zealand Waste Strategy that was launched in March 2002 offers an opportunity to put into practice a series of actions that are essential to stop, and then reverse, the inexorable accumulation of waste that degrades ecosystems and despoils landscapes. The strategy covers actions that are intended to be taken, namely, developing a sound legislative basis for waste minimisation and management, developing efficient pricing policies, implementing high environmental standards, obtaining adequate and accessible information and making more efficient use of materials. The strategy covers solid, liquid and gaseous wastes and addresses waste issues from generation to disposal. The intent is to move from 'end of pipe' approaches to zero waste targets. The connection to sustainability is explicit in the strategy as it states:

> *Reducing New Zealand's waste is a cornerstone of government's commitment to sustainable development. Local government is crucial in putting this into effect, and all New Zealanders must take responsibility for reducing waste and managing it better.*

The strategy discusses and promotes 'green purchasing', which is buying those products and services that minimise their environmental effects throughout production, use and disposal. It points out that since government (central and local) consumption comprises more than a fifth of GDP, "Government green purchasing is vital."

A2.3.5 Tourism

> *Take nothing but photos, leave nothing but footprints.*

The perception that tourism and tourists make only light demands on the environment while

contributing significantly to the economy is misplaced. By the mid-1990s the Commissioner had received numerous concerns regarding the environmental effects of tourism on public conservation lands. This led to a wide-ranging investigation, extending well beyond conservation lands, that became an overview of one of New Zealand's most important industries (PCE, 1997c).

Feedback from a discussion document (released December 1996), interviews and other research showed that there is general acceptance that tourism provides the opportunity for generating revenue and employment at the local, regional and national level. Despite the economic benefits, however, there is a wide range of environmental effects associated with the tourism sector, some of which have the long-term potential to seriously damage both the environment and the industry. The three main adverse environmental effects associated with tourism were:

- loss of quality of some relatively unspoilt parts of New Zealand's natural environment
- loss of amenity values from incremental development (in both rural and urban places), which can also affect communities and lifestyles, especially in places where the proportion of visitors to residents is high
- pressure on infrastructure (particularly sewerage and roads) which is often seasonal, resulting in significant costs to local communities.

The investigation identified serious shortcomings in information for the tourism sector and its associated environmental effects. This is a major constraint on the assessment and management of those effects and a major risk for the sector. Overall, the investigation concluded that the government system for the management of tourism is fragmented. There is poor communication and coordination between different agencies, especially between those agencies that promote tourism and those that manage the environmental effects associated with it. Government agencies have very little ability to influence the direction of the tourism industry, and thus its effects on the environment.

The investigation found widespread agreement that tourism should be managed sustainably and marketed on the basis that New Zealand is a high quality, tourist destination. Tourism's reliance on the quality of the natural environment, and of visitors' experiences, is also generally recognised. Inadequate discussion about what sustainable tourism means for New Zealand and its tourism sector, coupled with the lack of sectoral coordination, made it difficult for tourism to achieve its potential in the absence of an agreed strategy for sustainable tourism in New Zealand.

The Commissioner therefore concluded with a principal recommendation that the Minister of Tourism facilitate and resource the development of a strategy for sustainable tourism for New Zealand. The Government subsequently initiated the development of a New Zealand Tourism Strategy in 2000 which was adopted and implemented in 2001.

In February 2002, the Government released a Tourism Research and Development Strategy 2002, prepared by the Tourism Research Council New Zealand. This strategy advances recommendations from the New Zealand Tourism Strategy 2010. It recognises that planning and decision making in the tourism sector requires relevant, timely and quality information which has been absent in the past.

A2.3.6 Tourism - agencies and management

The tourism sector is extremely diverse.[12] Many parts of the industry are highly competitive and marginally profitable, which has implications for the effective management of environmental effects associated with tourism. At the same time there are a large number of government agencies with widely varying interests and roles in the management of tourism effects, while not having a primary role in tourism management. The mix of private sector operations and public agency interests makes for a complex institutional picture.

The Department of Conservation (DOC) has the responsibility for managing the environmental

effects associated with tourism on public conservation lands. The Commissioner concluded (PCE, 1997c) that it is appropriate for the department to retain responsibility for visitor services, including concession management, as part of its overall management responsibilities. The Commissioner found that DOC is distinctive among government agencies in its purposeful integration of conservation objectives with visitor use, through its widely consulted Visitor Services Strategy and the regionally specific provisions in its conservation management strategies. Passing responsibilities for tourism and visitor management to a separate agency would only further complicate the assessment and management of environmental effects on conservation lands.

Over the rest of New Zealand local authorities have responsibilities for managing tourism effects through their regulatory, resource management, infrastructure and service roles. While local authorities welcome tourism for its economic potential, their performance in the management and monitoring of tourism effects has varied widely. Obviously, available resources influence this. To reduce conflicts of interest between promoting tourism, policy regulation and provision of services and infrastructures, territorial local authorities have often set up regional tourism organisations (RTOs). These regional tourism organisations have a crucial role in managing tourism, which should include a strategic approach to tourism development at local and regional levels, as well as marketing.

At the level of central government a number of infrastructural changes have occurred since the release of the Commissioner's report on tourism impacts on the environment in mid-1997. The first change was the establishment of the Office of Tourism and Sport in July 1998 within the Ministry of Economic Development. In 2000, the Tourism Research Council was established in partnership with industry. Its role is to provide credible, authoritative and integrated tourism research, information and forecasting.

Sustainable Tourism in Kaikoura

With over a million visitors a year and only 3,500 ratepayers, the Kaikoura District Council is firmly focused on the long-term sustainability of its whale-watching, tourism-based economy. Kaikoura hopes to become New Zealand's first certified community for Green Globe 21, a global environmental tourism standard, by the end of 2002. The benchmarking process is looking at the town's energy use, water consumption and greenhouse gas emissions. Curb-side rubbish pickup was replaced by curb-side recycling two years ago and Kaikoura aims to become a zero waste community. It's a 'small steps' approach to becoming sustainable that is heading in the right direction.

(New Zealand Environment, 22 February 2002)

The New Zealand Tourism Strategy 2010 recommended further structural changes. Consequently, the Office of Tourism and Sport was replaced by a Ministry of Tourism with a larger policy team as well as a separate research team and an establishment date of January 2002. The new Ministry continues to be located within the Ministry of Economic Development. The New Zealand Tourism Board became Tourism New Zealand in 2001 but continues as a government-funded agency, with the key role of promoting New Zealand as a tourist destination overseas. The Ministry of Tourism will monitor and evaluate Tourism New Zealand's effectiveness in consulting with and involving key tourism sector groups. Central government is also putting some money into assisting the response of local government to the tourism strategy.

This suite of changes - strengthening the capacity of the Government policy agency, establishing a research agency linked to the tourism industry, improving the linkages between the Government and private sectors - should address earlier concerns expressed by the Commissioner. These concerns were that the policy functions were under-resourced and dominated by the (previous) NZ Tourism Board with its narrow statutory focus on marketing New Zealand tourism. So while there is widespread agreement that tourism in New

Zealand should be managed sustainably the previous structures hindered the achievement of this goal. The new structures provide an opportunity to better understand and research what 'sustainable tourism' means for New Zealand and how to achieve it.

A2.4 Involvement of tangata whenua

The Crown has a number of obligations under the Treaty of Waitangi of 1840, which formalises a partnership between two parties - the Crown and Maori. The Treaty is part of New Zealand law to the extent that it is incorporated into statute. Those environmental statutes that refer to the Treaty do so in various ways, some binding the Crown more strongly than others. For example, the Conservation Act 1987 provides for a stronger obligation to the Treaty principles than does the RMA.[13] Matters in Sections 6 and 7 of the RMA also have particular relevance to tangata whenua, namely:

- the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, wahi tapu, and other taonga[14] (section 6(e))
- kaitiakitanga (section 7(a))
- recognition and protection of the heritage values of sites, buildings, places or areas(section 7(e)).

Local authorities are not part of the Crown and, therefore, local authorities are not generally considered to be the Treaty partner in place of the Crown in the local context (PCE, 1994a). The Local Government review aims to clarify the relationship between local government and the Treaty of Waitangi. The Local Government Act 1974 presently makes no reference to the Treaty of Waitangi or its principles. Hence the duties and obligations of local authorities under the Treaty and its principles derive only from statutes such as section 8 of the RMA.

In 1992, when the RMA was 'new' legislation, the Commissioner put forward a series of proposed guidelines to assist local government and iwi (tribal groups) and hapu (family or district groups, communities) to develop procedures for consultation (PCE, 1992). Over subsequent years a variety of citizens expressed their concerns to the Commissioner where the key issue was the effectiveness of communication between tangata whenua and local government. A subsequent investigation (PCE, 1998d) revisited these concerns and looked at factors that affect tangata whenua participation in environmental planning and resource management in New Zealand.

The investigation concluded that the current legislation provides a strong basis for tangata whenua participation in policy development and management for the natural environment. The RMA gives recognition to consultation, traditional values and relationships, the principles of the Treaty and the ongoing duties of kaitiakitanga. It found greater and more widespread awareness amongst some councillors, council staff and developers of the practical benefits of more effective involvement of tangata whenua. Iwi and hapu also had greater awareness of the opportunities and processes for their involvement and for the practical expression of kaitiakitanga in sustainable resource management.

Despite these useful gains, there were still no national policy frameworks or standards to ensure efficient, consistent, and reliable systems for tangata whenua participation in environmental management or the appropriate accommodation of the values and concerns of tangata whenua as required under the RMA. **Therefore the Commissioner recommended that the Minister for the Environment prepare a national policy statement under the RMA to address issues of tangata whenua involvement in environmental management. It also made other recommendations to provide monitoring of various efforts to improve tangata whenua participation in environmental management, recommended training programmes for local authorities and elected councillors and encouraged local authorities to invest in**

appropriate initiatives to further improve tangata whenua participation in environmental management. The Ministry for the Environment is investigating the Commissioner's recommendation to develop a national policy statement under the RMA (PCE, 2001g).

A2.4.1 Tangata whenua links to environmental management

As described in section A2.4, tangata whenua have a special relationship with the Crown that is exemplified in numerous pieces of legislation relating to the environment. This section briefly summarises, from the Commissioner reports cited in this report, the experiences of tangata whenua with the institutions and processes responsible for environmental management.

The RMA is important legislation in the way it recognises a range of tangata whenua concerns (Section 94 of the Act). As with other aspects of the actual delivery of the RMA, local authorities have considerable discretion as to how they recognise and provide for Maori in their plans. As a result, implementation has been variable. Consequently, there has been little overall consistency with regard to consultation arrangements between government agencies and tangata whenua. At the same time there have been examples of positive proactive initiatives. Successful implementation practices include the appointment by local authorities of Maori liaison officers or Maori advisory groups to assist with interpretation and implementation of the relevant sections of the RMA and support by local authorities for iwi management plans.

Unfortunately, despite the fact that tangata whenua are seeking more direct participation and strategic involvement in environmental management from the outset, iwi have often lacked the financial resources to participate effectively in plan-making and resource consent processes under the RMA. The 'Planning Under a Co-operative Mandate' research indicated that many plan-makers in district councils did not understand the provisions of the RMA with respect to Maori issues, which impeded progress (Ericksen et al, 2001).

Section 33 of the RMA enables local authorities to transfer any of their functions, powers or duties under the RMA to any public authority (including any iwi authority). No local authority has yet made a transfer of power to iwi under this section (PCE, 2001g).

A significant barrier to implementing the RMA is that central government has not clarified the obligations of local government under the Treaty in the principal Act that directs local government activity, the Local Government Act 1974. This has resulted in uncertainty and non-compliance with obligations under the RMA (Ericksen et al, 2001; PCE, 1998d).

Tangata whenua concerns over inadequate participation extend beyond issues around the RMA. For example, there has been insufficient opportunity for tangata whenua to participate in policy and decision making in the tourism sector. Improved understanding and communication would help in achieving better environmental outcomes, more satisfactory integration of Maori values and priorities, and fulfilment of the requirements of legislation regarding the principles of the Treaty of Waitangi. Maori must have the primary role in determining appropriate ways to achieve this.

A2.5 Measuring progress towards sustainability

A2.5.1 Measuring ecosystem integrity

Good decision making for environmental management requires that agencies obtain and maintain relevant information on the state of the environment. This is particularly true for the RMA, which can be described as 'information intensive', as it requires resource data about the environment in a way that previous legislative requirements did not. Section 35 of the RMA requires local authorities to carry out a range of monitoring and

information gathering activities including state of the environment, suitability and effectiveness of policy statements and plans, delegation and/or transfer of functions or powers and resource consents. At a general level, promoting 'sustainable management' requires knowledge of resources (what's there) and the changes in the resource base and the supporting ecosystems (PCE, 1998b).

Central government has undertaken a number of initiatives aimed at assisting local authorities to undertake these various functions under the RMA. The Ministry for the Environment has been working since 1995 on an environmental performance indicators programme to help with state of environment reporting. Environmental performance indicators are being developed for air, marine, climate change, ozone, land, waste, freshwater, transport, amenity, pests weeds and diseases, energy, biodiversity, contaminated sites and Maori. Some are completed and in use, but progress has been slow.

Various PCE investigations have reported difficulties with monitoring and information systems. For example, applicants for resource consents under the RMA do not always appreciate the likely effects of their activity or the information that is required with their application (PCE, 1995a; PCE, 1998b). An investigation into the adequacy of how three territorial authorities evaluated assessment of environmental effects (AEE) showed there was a need for improvement (PCE, 1995a). The Commissioner concluded that there appear to be some fundamental barriers to improving monitoring and information systems including the costs of obtaining information and the availability of fundamental scientific information (PCE, 1998b).

One consequence of central government restructuring has been a loss of national data sets for processing information about people and their environments in urban areas. Consequently, data sets tend to be incomplete, inconsistent and short run which means that information on the urban environment is fragmented and partial (PCE, 1998a). There is no national urban agency that can undertake research and provide information on urban sustainability issues to local government. There is no output class for urban research in the Public Good Science Fund and no urban research funding strategy.

It follows that few local authorities have taken an integrated approach to reporting on the state of the urban environment, although they have produced a range of state of the environment reports. These reports tend to exclude social and economic dimensions and therefore faithfully reflect the RMA emphasis on natural resource management. There is no requirement or external incentive for local government to consider the broader dimensions of reporting against sustainable development criteria. Despite these shortcomings the six largest cities in New Zealand have recently released the results of a 2-year study looking at the quality of life and the impacts of growth and urbanisation on their citizens (Auckland City Council et al, 2001). The results of monitoring social, economic and environmental conditions revealed wide disparities for indices such as income, accommodation costs, educational outcomes and differences in health. Over half the citizens were generally comfortable with the community in which they live. All the councils have structures and processes in place to work with tangata whenua. Although there were many issues around shortcomings in data availability, the exercise has been seen as a positive exercise and it may be updated in around two years time.

One of the Sustainable Management Fund's topic areas is Creating Sustainable Communities and Businesses. This includes encouraging sustainable development, addressing urban environmental challenges, tackling climate change and air quality issues and improving the environmental performance of business. What is now needed is urban sustainability indicators and targets to measure and report on trends in sustainable urban development.

Aside from the information requirements for implementing the RMA, there are many other reasons why agencies, organisations and communities need accurate and current information about local environments and national trends. In 1997, the first attempt to provide a comprehensive national overview of the state of the New Zealand environment was published (MFE, 1997). Its strongest conclusion was that a considerable upgrading of environmental information is required if the state of the country's environment is to be accurately described and trends detected. For determining environmental trends over time it is necessary to have comparable sets of information which, unfortunately, is rarely the case for New Zealand despite the existence of a great deal of valuable information spread between a wide range of publications and disparate databases.

Information gaps exist for both terrestrial and marine environments with negative consequences for policy formation, management of resources, mitigation and monitoring. They also create a serious economic and environmental risk. In the marine case, for example, there are information shortfalls with respect to basic species information, understanding the function and structure of various marine ecosystems and the extent to which pollution and sediment run-off damages estuaries and shallow coastal waters. For both land and sea environments there has been a significant decline in taxonomic expertise for the identification and classification of species. This has serious implications both for describing the full extent of New Zealand's indigenous biological diversity and for biosecurity purposes (MFE, 1997; PCE, 2000c). Declining capacity in the discipline of taxonomy is linked to fewer training and employment opportunities and an aging workforce in this area.

These shortfalls in capacity in one area of science related to environmental needs are not unique. For example, current investment in marine ecosystem research is inadequate given that the Government is New Zealand's guardian of the marine commons (PCE, 1999b). There has been a marked decrease in research on the various impacts on marine ecosystems over the period 1992-1999. Linked to this is Government's decision to devolve research and management functions to the fishing industry, which is a high-risk strategy for a number of unique and very vulnerable ecosystems.

A2.5.2 Measuring Consumption and Production

There has not been a coordinated and reliable collection of national waste statistics in New Zealand, but this situation may change with the release of the government's Waste Strategy in March 2002. New Zealand also lacks data on hazardous wastes linking quantities and types generated with means of disposal and effects on the quality of the environment (including long-term risks). According to the most recent Ministry for the Environment's information on waste (MFE and LGNZ, 2002) every year in New Zealand:

- 3.4 million tonnes of waste ends up in landfills
- 500 billion litres of sewage are fed into 250 wastewater treatment plants, generating up to one million tonnes of sludge
- 13,000 tonnes of medical waste is incinerated
- about 93% of the materials we use are thrown away during production
- about 80% of what we produce is thrown away after one use
- the quantity of waste per person dumped every year in Auckland has increased by almost 75% since 1983.

These statistics are indicative of the behaviour of linear systems in action. Such systems operate on the 'take, make, waste' model. These are in contrast to cyclical systems that are designed from the beginning to minimise waste and maximise the value of resources through their re-use and recycling.

Information on New Zealand's energy intensity and consumption is reported in the annual Energy Data File, published by the Ministry of Economic Development. EECA is responsible for monitoring existing energy sources and their use. It also investigates potential sources and applications, together with the economic, social and environmental impacts, in both short and longer terms.

In 1996, New Zealand was around 87% self-sufficient in its primary energy needs. This fell to 72% in 2000. In 1996, the transport sector used 39% of total consumer energy, which increased to 41% in 2000. Between 1996 and 2000 the industrial sector component of total consumer energy decreased from 35% to 32.5% while the residential sector increased from 12% to 13% (Ministry of Economic Development, 2001a). Since 1998, energy intensity has largely remained steady (EECA, 2001b).[15]

Good information about the environmental effects associated with tourism has been seriously limited in the past. This has been a major constraint on the assessment and management of those effects as well as being a major risk for the tourism sector. The availability of basic statistics and other relevant information relating to tourism is variable. In particular, there is a significant lack of data about domestic tourism. Data gathering, research and monitoring programmes are generally not well targeted or integrated with day-to-day and long-term environmental management within the relevant government agencies or the tourism industry. The various structural changes of the last year, including the creation of the Tourism Research Council New Zealand, should go a long way to remedying these shortcomings.

A2.6 Evaluating the stocktake

There have been changes in the way our biodiversity and natural resources are managed over the past decade, but have these changes really been moving us towards sustainable development? What conclusions can we draw from this summary of investigations carried out by the Commissioner and other critiques of New Zealand's performance with respect to environmental management? This section draws together the various strands that emerged from the stocktake.

There was an optimistic start to the post-Rio decade. It appeared that New Zealand had, with the passage of the Resource Management Act (RMA), not only rationalised a welter of overlapping and cumbersome resource management statutes, but also established an efficient, economically rational regime for managing natural resources in a way that recognised the importance of the 'environmental bottom line'. The RMA also explicitly recognised the importance of the many relationships between the culture and traditions of tangata whenua and the land. The question was whether the reorganised local government was adequately structured and had the capacity to deliver the integrated environmental management that the RMA promised. A joint study by the Commissioner and the Auditor-General (PCE & Auditor-General, 1999) concluded that all of the local government structures (regional and territorial authorities/unitary authorities) were capable of doing so.

A decade on, a number of investigations by the Commissioner have indicated that the legislation and local government have not lived up to those initial expectations of establishing a new, more enduring relationship between us, the users, and the land and waters of New Zealand. Inadequate guidance and training from central government on setting environmental outcomes and evaluation, the perpetuation of old mindsets and behaviour, and the lack of an integrated approach to environmental management were some of the key impediments behind the poor performance of a number of local government authorities. Nor were local authorities helped by the slow development of environmental indicators, crucially limited amounts of nationally-consistent information on the environment and a lack of research into urban sustainability issues.

The RMA has been of mixed benefit to tangata whenua. A number of councils can point to positive proactive initiatives. There is more awareness of the practical benefits of more effective involvement of tangata whenua and the RMA gives recognition to consultation and the ongoing duties of kaitiakitanga. At the same time, many iwi have lacked the capacity to participate effectively in RMA processes. The failure of central government to clarify the obligations of local government under the Treaty of Waitangi in the Local Government Act 1974 has led to uncertainty and non-compliance with RMA obligations in many instances.

This is not to blame the RMA itself for these lists of shortcomings. The Commissioner concluded in 1998 that the extensive criticisms had largely been about process, not the substance of the Act (PCE, 1998e). The Commissioner's central concern throughout this period has been that the larger goal of advancing the country towards sustainable development was being forgotten in disputes over detail within the RMA. To that end it is important to recall that the RMA was deliberately not an Act about the totality of sustainable development. It has a more limited focus on trying to get the environmental management part of sustainable development right. However, some people have mistaken this (important) part for the whole. Despite a wide range of different government and private sector initiatives, which individually are contributing to the overall objective of sustainable development, a larger coherence has yet to emerge.

This stocktake of PCE investigations into topics as diverse as managing the marine environment, tourism impacts on the environment, the adequacy of our biosecurity systems, possum management and the management of urban water systems has demonstrated a common underlying problem. Many problems have arisen, or been exacerbated by poor integration, inadequate cooperation between sectors and agencies, and by a lack of structural and management incentives to work towards a more collective public good. This has been characterised in New Zealand and overseas as 'the silo mentality'. In the case of management of the marine environment, where adopting a 'whole systems' approach is vital, a fragmented management system was found to be further hampered by a grave lack of trust and lack of communication between stakeholders.

In part, the silo approach was a logical outcome of the managerial tendency to defend one's 'patch', especially in the years following massive restructurings in the New Zealand public sector. It is also a structural consequence of the tendency in many OECD countries, including New Zealand, to address increasing complexity by setting up more specialised agencies (OECD, 2002). The focus in the public sector reforms of the 1980s with their emphasis on outputs, transparency and individual accountabilities of chief executives encouraged inward-looking departmental achievements. In contrast, sustainable development is a 'cross-cutting issue' that requires the 'collective responsibility of Government' to be honoured in practice, not just in the rhetoric, if it is to achieve tangible results.

Another point emerging from the stocktake relates to the sequencing of when strategies and legislation were developed that affect sustainable development. Figure 4.2 gives a timeline of when various strategies and programmes that have a bearing on Agenda 21 initiatives were initiated and implemented. In Figure 4.3 the environmental management strategies are grouped and the timeline for the passage of major environmental legislation is added.

The pattern that emerges indicates that while the major environmental Act (the RMA) was in place by 1991 a number of substantial and important initiatives to develop strategies relating to sustainable development have been initiated only in the last few years. Quite possibly if a number of strategies had been developed earlier a 'broad picture' analysis may have identified various inter-sectoral problems and exposed the shortcomings

of the silo approach. Instead, policy initiatives were more likely to be driven by reactive responses to relatively smaller issues, rather than by broader policy needs.

Another conclusion from Figure 4.2 is that there are now a substantial number of government initiatives and programmes in place or under development that have a bearing on various aspects of sustainable development. These extend across the three relevant areas - social, economic and environment. Since many ambitious initiatives have been in place for only a short time it is too soon to evaluate their effectiveness. What is now important to examine is how these various initiatives are linked and whether, taken collectively, they have the capacity to deliver for New Zealand a development path that is ecologically sustainable.

With its focus on previous PCE investigations and other reviews of environmental management at the macro-level, the stocktake has not commented on the numerous initiatives taken at the local government level in response to Agenda 21. Over the past decade, numerous local and regional councils have, initiated programmes with sustainable development objectives. Some of these are described in chapter 4.

Any commitments to sustainable development require the right sort of information against which progress can be measured. Both the stocktake and other analyses such as 'The State of New Zealand's Environment 1997' (MFE, 1997), have exposed critical shortcomings in this respect, both in public and private sectors, such as tourism. Information collected by regional councils, as required by the RMA, has not been to a nationally consistent set of standards. The Commissioner has identified fundamental barriers affecting monitoring and information systems including the availability of basic scientific information. Many national environmental data bases have not been updated, others have been lost during restructuring. Consequently, it is difficult to objectively judge progress in a number of areas bearing on environmental management.

Linked to inadequate information is the equally crucial need to have appropriate research initiatives underway to support sustainable development programmes. The Commissioner has commented on the research shortcomings with respect to a better understanding of urban systems. Without an expansion of the current research expenditure, linked to better information, New Zealand will continue to be hampered in getting the vital feedback and signals necessary to adjust and adapt environmental management to future needs.

Finally, an integral part of the adaptive management process is articulating and debating the issues and options with the public and sectoral interests. Overseas as well as New Zealand experience has shown that there is now an expectation of meaningful and informed dialogue between government agencies and their various client groups on a growing range of issues. These can range from the local, such as resource consent hearings, to the national, such as the use of genetic modification. Some PCE investigations have shown that consultation mechanisms and practices have improved over the decade, while in other instances we need a wider range of mechanisms and opportunities to effectively engage in meaningful and constructive debate on sustainable development issues.

1 The Environment Act 1986 empowers the PCE to, among other matters, "investigate any matter in respect of which, in the Commissioner's opinion, the environment may be or has been adversely affected" (Section 16(c)(i).

2 Implementing Agenda 21, Report of the Secretary-General, 2001. Prepared by the Commission on Sustainable Development acting as the preparatory committee for the World Summit on Sustainable Development, Second Preparatory Session.

3 Although the Hauraki Marine Park Act 2000 has provisions deemed to be a national policy statement.

4 A unitary authority is a territorial authority that also has the functions of a regional council. There are four unitary authorities in New Zealand - Gisborne District Council, Marlborough District Council, Nelson City Council and Tasman District Council.

5 Section 80 of the RMA - combined plans.

6 The website is: www.qualityplanning.org.nz.

7 See http://www.fish.govt.nz/sustainability/management_strategy.

8 Local Agenda 21 is a community strategy which can include a long-term vision statement, a prioritised action plan, implementing mechanisms, and monitoring and reporting through the use of indicators (Hughes, 2000).

9 Energy-Wise News, October 2001.

10 In the absence of a definition of 'waste' in the Local Government Act 1974, a recent High Court judgement concluded that wastewater, i.e. both sewage and stormwater, is waste for the purposes of Part XXXI of the Local Government Act. As a result, territorial authorities are now required to include solid waste and wastewater in their application of that part of the Act, including the adoption of a waste management plan, as required by s 539. (Manakau City Council v Attorney-General. Unreported, High Court, Auckland Registry M 1054-IM99, 8 February 2000, Laurensen J, p19.)

11 Tailings are waste materials from mining operations and are generally made up of a mixture of ground-up rock, water, heavy metals and chemicals used to extract precious metals.

12 The definition of the 'tourism sector' used in the PCE's 1997 report (PCE, 1997c) was "that economic sector which provides the goods and services that tourists use, together with those public agencies that have responsibility for or are involved in the management of tourism."

13 The Conservation Act 1987, Section 4. Act to give effect to Treaty of Waitangi - This Act shall be so interpreted and administered as to give effect to the principles of the Treaty of Waitangi.
The Resource Management Act 1991, Section 8. Treaty of Waitangi - In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

14 Wahi tapu - special and sacred places, taonga - valued resources, assets, prized possessions both material and non-material, kaitiakitanga - the responsibilities, passed down from the ancestors, for tangata whenua to take care of places, natural resources and other taonga in their geographical territory.

15 The energy required to produce a unit of gross domestic product. When the 'energy intensity' measure goes down, it indicates that things are being done, or produced, with less energy input. Hence a reduction of the energy intensity is a positive indicator that energy is being used more efficiently.

Appendix 3

Summary of Interviews

In the early stages of this project a number of people from a wide range of backgrounds and parts of the country were interviewed to obtain their views on sustainable development and its significance for New Zealand. The people who were asked to contribute their views were selected on the following basis. They were either individuals or representatives of groups who had been involved in sustainable development initiatives, or who held views about aspects of sustainable development (including positive and negative views) that we wished to explore. Attachment 1 is a copy of the letter and list of issues for discussion that were sent to the people subsequently interviewed. During this early part of the project over 65 people were interviewed including the following:

- academics
- students
- industry chief executives
- iwi representatives
- representatives from community groups
- journalists
- political commentators
- scientists
- economists
- environmental NGO representatives
- energy analysts
- planners
- local government politicians and managers
- environmental educators.

The following is a summary of the recorded comments. They have been summarised under particular themes, and the number of times similar comments were received is denoted by [xn].

The Commissioner would like to thank all those people who freely gave their time to be interviewed. None of those contacted declined to participate.

Themes	Comments from people interviewed
Sustainable development concepts	• Any form of activity which ensures the resources endures. [x1] • Sustainable economic development - if a country is economically well-off, it has the luxury of being socially and environmentally sustainable. [x5] • The Bruntland definition. [x7] • All things to all people. [x2] • NGO's include intergenerational dimensions, intrinsic value of species. [x1] • Sustainable development is about quality of life. [x5] • The maximum number of people getting the maximum number of their needs met within the shortest distance. [x1] • Nested egg model. [x2] • Sustainability is forever. [x1] • For farmers, it means passing land and businesses onto future generation. [x1] • It is an arrangement of human society such that health is protected and can continue indefinitely - ensuring environmental sources of human health are maintained. [x1] • Sustainable development is tilted towards the environment. [x2] • It is sustainable use (not preservation) of the environment. [x5] • Sustainability is about giving as well as taking, recognising holistic relationships and incorporating cultural values. [x1] • It attempts to bring together conflicting dimensions. [x2] • Sustainable development is a reflection of the extent to which the needs of the system are met - if the full range of needs are not met the system may not be sustainable. [x1] • It is a dialectic best understood through opposites. [x1] • Sustainable development is a direction/process of shifting pattern of material flows from unsustainable to more sustainable. [x1] • Sustainable development may be a process but sustainability is a destination. [x1] • Sustainable development is about morals and ethics. [x3] • The core is survival on this planet. [x1] • 'Common sense'. [x3] • Building today in a way that does not compromise tomorrow. [x1] • Ecological aspects must be recognised as providing the ultimate constraints for the social and economic aspects. This includes sustaining the underlying bio-physical systems; recognising intrinsic values of ecosystems; an inter-temporal component; respecting the rights of future life; ethical elements; avoiding exclusive anthropocentric bias. [x1]
Alternative concepts	• 'Efficient development' = considers full costs of development. [x1]
Catalysing, consciousness raising events	• Institutional reform of 1980s. [x1] • RMA. [x3] • Waste minimisation movement. [x2] • Power shortages. [x2] • GE debate. [x1]

Themes	Comments from people interviewed
Thinking issues - Values/beliefs etc	**Current situation** • Understanding is growing but still fairly poor. [x4] • The current generation of teenagers is 'me' focused - not environmentally aware. [x1] • Progress with education is poor - initiatives fragmented. [x1] • Many people live sustainable lives but do not call it that. [x1] • NZ'ers don't understand the scarcity of resources. [x1] • NZ'ers have a low awareness of environmental issues = clean and green. [x4] • People are increasingly cynical about sustainable development while feeling helpless because they know there is a crisis. [x1] • NGOs do not understand sustainability. [x1] **Barriers** • Thinking - disconnected, silo (the 5P's), linear/missing big picture. [x9] - government thinking is short-term, focused efficiency least cost outcomes. [x3] - economic thinking/attitudes towards resource use. [x4] • Consumption culture = happiness. [x2] • Difficult to get people to make ecosystem - human connections/understand environmental effects of behaviours. [x2] • Difficult/ambiguous concept to understand/poor, varied and contradictory definitions. [x7] • Hard issues - equity, distribution of resources. [x1] • Tight focus on financial values v broad range of community values. [x1] • Lack of sustainable development awareness/understanding. [x3] **The way forward** • We will need an external stimulus/crisis to make us aware. [x5] • Education is critical - knowledge leads to respect. [x3] • Education needs a Curitiba type model - a central advisory group with funds from various sources coordinating and delivering services. [x1] • We need to take personal responsibility for actions. [x5] • We need an attitudinal/value/mindset/paradigm shift. [x9] • We need a common understanding of the meaning of sustainable development. [x2] • Tangata whenua contribution - diversity broadens focus. [x1] • Indigenous thinking/values are often more holistic. [x1] • Change attitudes and culture of Wellington and local government bureaucrats. [x2]
Implementation issues	**Current situation** • Pressure to adopt sustainable development is low in NZ. Small population and good supply of natural resources. Society is generally comfortable with status quo. [x4] • NZ is not as advanced as other OECD countries. [x1] • Little implementation is happening in NZ. [x5] • Economics overrides other considerations. [x2] • 15 years of economic reform has not provided benefits and we've lost a lot. [x1]

Themes	Comments from people interviewed
Implementation issues *continued*	• It's the mode/pattern of consumption that's a problem. [x1] • The economy is unsustainable because of its reliance on oil. [x1] • NZ focuses on land distribution rather than appropriate land use. [x1] • The health component of sustainable development is not well developed but offers way of integrated thinking. [x1] • Climate change - NZ is a big receiver of impacts but not big contributor. [x1] • Integration between and within economic, social and environmental sectors has not been achieved. [x1] • DoC's contribution is ecosystem management. [x1] **Barriers to progress** • Key failure in leadership = lack of central government champion/leadership/ central government doesn't 'get' sustainable development [x12] - no strategy, game plan, priorities, implementation instruments [x5] - lack of processes/opportunities for discussion that build consensus towards a vision/strategy/we need debate [x7] - central government worried about working with local government on sustainable development issues [x2] - central government is disconnected from communities - doesn't understand values [x1] - fractured nature of government decision making [x1] - government procurement polices (Education and Housing NZ) preclude emphasis on sustainability. [x1] • NZ is starting from a higher existing threshold - the easy stuff has been done. [x2] • Lack of research/technical capacity/knowledge - ecosystem understanding, environmental bottom lines. [x7] • Science/research groups work in a reductionist way. [x1] • Failure to use science. [x1] • Got enough research - need to take action. [x1] • Media focuses on conflict, negativity, sensationalism rather than informing public. [x1] • Lack of coordination/integration/cooperation. [x5] • Hard to measure progress - lack of indicators. [x4] • There are perceptions about GM that it offers opportunities for sustainability. [x1] • Local government financial constraints - limits opportunities to take major initiatives. [x3] • NZ is poor at reviewing policies and assessing outcomes - does not learn from experience (electricity reform). [x1] • Arguments about property rights. [x3] • People don't know how to operationalise sustainable development. [x1] • Globalisation/international conventions and agreement with lower standards. [x2] • Sustainable development has been mortgaged by the Greens, it's a 7% concept, it's been greenjacked. [x4] • Democracy -means a focus on short-term timeframes/policy changes. [x5] • Vested interests - transport industry, business. [x2] • There is a reliance on one tool - the RMA. [x2]

Themes	Comments from people interviewed
Implementation issues *continued*	• Building industry is fragmented. [x1] • State sector and local govt reform are barriers. [x1] **The way forward** • Leadership (especially national) is critical [x16] - We need a government with vision and courage [x2] - We need a clear set of common objectives/goals/targets/national level multi party consensus/ ethical statement to guide us towards sustainable development [x7] - Government departments should be required to produce an sustainable development annual report [x1] - Auditor-General should be responsible for environment as well. [x1] • We need to promote greater integration vertically and horizontally - coordination, cooperation, collaboration. [x6] • Key consideration is to 'make sustainability easy'. [x7] • We need to sell/market it - 'make them think it's their idea'. [x4] • To work: it must be fun, people must feel good about it; business should be able to make money from it; we should learn from the experience. [x1] • Sustainable Pacific - NZ and Pacific linked. [x3] • We need to foster national identity/ethos/common purpose. [x2] • Critical issue - water, the only globally competitive advantage NZ has is fresh water. [x2] • Critical issue - dairying. [x1] • Critical issue - GE. [x2] • Critical issue - sustainability of cities. [x2] • Critical issue - the coast. [x2] • It's easier to put into operation successful initiatives at a local level. [x5] • Sustainable development has to be implemented at different levels. [x2] • Incremental change is likely to be more successful than major system shifts. [x5] • Economic growth includes - Increasing value of products without increasing energy use [x1] - Limits to growth [x2] - The importance of showing short-term benefits of sustainable development - economic benefits can be used as a driver [x1] - Getting the right infrastructure [x1] - Needing to shift from mining to managing resources [x2] - Needing strong economic and knowledge base. [x1] • Social dimensions include - Making the links between environment and health [x2] - Getting the community involved/build strong trust based relationships [x2] - Using local knowledge [x3] - Addressing poverty/social dimension. [x2] • We need a national policy for the built environment. [x1] • We need measurement tools. [x2] • Capacity building - for community organisations [x2]

Themes	Comments from people interviewed
Implementation issues *continued*	- Invest in the knowledge economy/R&D for sustainable development [x4] - Sustained sustainable development education programme [x5] - Education in environmental ethics [x1] - Chief scientist to organise research [x1] - Train people to deal with chaos, resilience, complex systems, linkages, time and scale [x1] - BRANZ could be a home for an increased focus on research into sustainable architecture and design [x1] - Invest in social/human capital [x2] - Iwi need proper funding base [x1] - Research into environmental carrying capacity. [x1]
Structural issues	**Current situation** • Huge advances have been made over the last 10 -15 years - MfE, RMA, PCE etc. [x1] • No new structures are needed - we need to work harder. [x1] • Reform of research institutions affected our capacity to get information for environmental management purposes. [x2] • Central government works in silos. [x7] **Barriers** • There are weak supporters - MfE and EECA - and strong opponents - Treasury and MED - in central government. [x1] • MfE has been marginalised and does not have the professional capacity to provide leadership on the RMA. [x1] • Government structures. [x1] **The way forward** • An audit of MfE against Environment Act is required. [x1] • 'Sustainable development council' is needed to provide coordination, policy advice and monitor, review and adjust directions for sustainable development. [x2] • Minister/Ministry for sustainable development is required. [x3] • Partial re-centralisation of regulatory system - EPA type organisation. [x1] • Provide coordination at Cabinet level. [x1] • More power is needed for local government/the LGA reform. [x3] • Iwi need decision-making powers not just advisory (sic for environmental issues). [x1]
RMA	• The RMA helped to turn sustainability into mainstream fight/change mindsets. [x6] • It is one way of achieving sustainable development but not enough. [x2] • Processes are too adversarial/litigious/expensive. [x4] • There is a need for greater certainty. [x2] • There are implementation problems. [x4] • It is a functional paradigm not a place paradigm. [x3] • Regional councils have failed. [x1] • It misses the big picture. [x2] • It fails to deal with cumulative effects. [x2] • RMA has side-lined social considerations. [x1]

Themes	Comments from people interviewed
Business	• Sustainable development is now a core issue for debate by business = progress. [x2] • Manufacturers are more interested in eliminating waste than SST. Waste production = lower production costs = selling point for sustainability. [x1] • Sustainable development will raise questions of constraints on growth. [x1] • Business is not necessarily motivated by money and efficiency. [x1] • Business needs to develop a new culture. [x1] • The majority of business leaders are aware of environmental issues. [x1] • Business Council for Sustainable Development. [x1] • Business for Social Responsibility. [x1]
Tools	• Public awareness campaigns = short-term behavioural changes. [x1] • Economic instruments = price signals key component for change, costing externalities, taxes bads rather than goods, eco-taxes. [x13] • Mix of economic and other instruments is required = right instrument for the job a key issue. [x2] • TQM is a useful tool. [x4] • TBL reporting. [x7] • Industry codes of practice. [x1] • Producer responsibility legislation. [x1] • Green design/sustainable architecture. [x2] • Quality independent information on environmental effects for consumers. [x1] • Indictors of progress. [x3] • Demand management - water. [x1] • Environmental accounting. [x1] • An environmental atlas. [x1] • Global reporting Initiative. [x1] • AA1000 - AccountAbility. [x1]
Case studies	• Fletcher Challenge project with an Otara School [x2] • Canadian model - Commissioner for Sustainable Development [x1] • Project 98, Farm Pride, the green tick [x2] • Statistics NZ indicators development programme [x1] • Recoverable Materials Foundation, Christchurch [x1] • Landcare TBL report [x1] • Redesigning Resources, Christchurch [x3] • Sustainable Cities, Christchurch [x1] • Canterbury Dialogues [x1] • Agenda 21 Forum, Christchurch = biodiversity related publications [x2] • Christchurch City Council waterways and wetlands programme [x1] • The Natural Step [x3] • Orion Energy - energy efficiency and electricity reform [x1] • Canterbury 2050 [x1] • MacPac [x1] • Ngai Tahu Mountains to Sea concept [x1]

Themes	Comments from people interviewed
Case studies *continued*	• CNG industry [x1] • Housing NZ - sustainable housing [x1] • Earthsong housing development [x1] • Auckland City Council Liveable Communities Strategy and Smart City [x1] • Genuine Progress Indicator (GPI) [x1] • Institute of Architects and Housing NZ sustainable design work [x1] • Canterbury University building - sustainable design [x1] • BREAM - European voluntary rating system for sustainability/energy efficiency [x1] • Waitakere City - leadership [x3] • Eco-hospital at Waitakere [x1] • Accountants for Sustainability [x1] • Today's Manukau - sustainable development community plan [x1] • Government and communities potential for partnership project - participatory democracy [x1] • Herman Miller - USA furniture company [x1]
The questions that need to be asked	• What lifestyle do we want to maintain and can we afford it? [x1] • Can we have sustainable development/integration and still have clear accountability? [x1] • Where do trust and ethics fit in? [x1] • What do we need to do to survive indefinitely? [x1]
Overseas examples	• Australia has done better than NZ. [x3] • Dutch approach [x1] • Denmark [x1] • Sweden - aiming to be fossil fuel free [x1] • Hanover/Kronsberg/Freiburg, Germany [x1] • Canada [x3] • Portland [x1] • Melbourne [x1]

Attachment 1

PCE 40-03

date

name

address

Dear

REVIEW OF SUSTAINABLE DEVELOPMENT IN NEW ZEALAND

I would appreciate your participation in my review of New Zealand's progress in implementing the principles and objectives of Agenda 21 since the United Nations Conference on Sustainable Development in Rio de Janeiro in 1992.

The purpose of the review is to provide an independent analysis of New Zealand's environmental management performance within the context of Agenda 21, and to explore opportunities to implement the concept of sustainable development in New Zealand. The review is independent of the Government's report to the World Summit on Sustainable Development. It is not intended to duplicate the Government's report or the work being done on developing the New Zealand Sustainable Development Strategy, although it is likely that some topics will feature in all three documents.

I would like to invite you to participate in the project team's canvassing of views on issues associated with sustainable development. The project team has identified you as one of a number of key individuals across a range of backgrounds whose ideas and opinions on the future of sustainable development in New Zealand would be a valuable contribution to this project. I hope you will be willing, and have the time, to participate.

I expect to complete the review and table it in Parliament some time between March and May 2002. It will rely primarily on evidence-based information gathered over the last 10 years from investigations and reports carried out by the Parliamentary Commissioner for the Environment (PCE), as well as other independent sources of information, such as OECD Environmental Performance reports. As I have mentioned, in addition to a retrospective assessment of New Zealand's environmental management performance, the review will also take a forward look at directions in which the PCE considers New Zealand should be heading with respect to the integration of environmental considerations into social and economic policies and decision-making. In short, what is needed to fully develop and implement the concept and principles of sustainable development?

Please find attached a list of issues that the project team would like to discuss with you. It is not an exclusive list, but a guide to the range of matters we would like to explore.

The project team consists of Bruce Taylor, Philippa Richardson, Wren Green and Lorna Douglas, one of whom will follow up this letter with a call to arrange a convenient time to meet if you are willing and able to participate. It is envisaged that an hour or so would be the time required. In the meantime, if you would like further information about this project please do not hesitate to contact either of the following:
Bruce Taylor (tel: (04) 495 8363; email: bruce@pce.govt.nz)
Philippa Richardson (tel: (04) 495 8352; email: philippa@pce.govt.nz).

Thank you in advance for your assistance.

Yours sincerely

Dr J Morgan Williams

Parliamentary Commissioner for the Environment

Review of Sustainable Development in New Zealand

Issues for discussion

The following indicates the range of issues on sustainable development[1] that the Parliamentary Commissioner for the Environment would like to explore during his project team's discussions with selected people. The questions below are a guide only. You may prefer either a broad discussion across a number of sectors or interests, or a focused discussion in relation to your specific areas of interest. Issues outside this range can also be covered, as you consider appropriate.

1. How would you describe your concept of sustainable development? What are the major impediments to New Zealand communities, businesses and regions of pursuing your concept of sustainable development?
2. In your opinion how meaningful is the concept of sustainable development to most New Zealanders? To what extent, if at all, do you believe it is thought about?
3. What contribution has the concept of sustainable development made, or could have made, to our lives in New Zealand over the last decade?
4. To what extent do you consider the concept of sustainable development to be more or less developed in New Zealand compared, for example, to other OECD countries?
5. Is there an alternative concept to sustainable development, which would be more meaningful and effective, or do we just need to work harder at communicating and gaining acceptance of the principles of sustainable development?
6. What do you consider to be key points of tension between social, economic and environmental goals pursued in a sustainable development framework?
7. What system[2] changes, if any, do you consider are necessary to achieve effective and enduring sustainable development outcomes?

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[1] For the purpose of this review, sustainable development is defined as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). At the same time it is acknowledged that there are a wide range of views on, and interpretations of, sustainable development.

[2] 'system' includes legislation, policies, strategies, institutions, processes and programmes.

Glossary

adaptive management	a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs
bio-capacity	the total biologically productive land available to a specified population
bio-prospecting	the search of biodiversity for valuable genetic and/or biochemical resources, e.g. pharmaceuticals
biodiversity	the variety of all biological life (plants, animals, insects, fish, birds, invertebrates and micro-organisms), the genes they contain and the ecosystems and habitats in which they live
biosecurity	the exclusion, eradication and effective management of pests and unwanted organisms into New Zealand
biosphere	the part of the Earth (up to a height of 10,000m and down to the depths of the ocean and several hundred metres below the surface of the land) and the atmosphere surrounding it, which is able to support life
biotic	relating to life
ecosystem	a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit
ecosystem well-being	a condition in which the ecosystem maintains its diversity and quality - and its potential to adapt to change and provide a wide range of choices and opportunities for the future
energy intensity	energy required to produce a unit of gross domestic product
entropy	in thermal processes, a quality which measures the extent to which the energy of a system is available for conversion to work
externalities	the adverse effects on the environment arising from production and consumption, the costs of which are not fully accounted for in the price and market system.
Gross Domestic Product (GDP)	a measure of the total flow of goods and services produced by the economy over a specified time period, normally a year or a quarter. It is obtained by valuing outputs of goods and services at market prices, and then aggregating. Only goods used for final consumption or investment goods or changes in stocks are included.
Gross National Product (GNP)	GDP plus the income accruing to domestic residents arising from investment abroad less income earned in the domestic market accruing to foreigners abroad.
hapu	family or district groups, communities
human wellbeing	a condition in which all members of society are able to determine and meet their needs and have a large range of choices to meet their potential
iwi	tribal groups
kaha	strength
kaitiakitanga	the responsibilities, passed down from the ancestors, for tangata whenua to take care of places, natural resources and other taonga in their geographical territory
manaakitanga	hospitality

mataitai	a fisheries reserve in an area of special significance to tangata whenua (see Fisheries (Kaimoana Customary Fishing) Regulations 1998)
PM_{10}	fine dust particles less than 10 micrometres in diameter, which can be inhaled into deeper parts of the lungs
Real Gross National Disposable Income	the net income of NZ residents from both domestic and overseas sources after taking into account income redistribution by way of international transfers, or Gross National Income plus net international transfers
runanga	Committee of senior decision-makers of an iwi or hapu
system of national accounts (SNA)	a coherent, consistent and integrated set of macroeconomic accounts, balance sheets and tables based on a set of internationally agreed concepts, definitions, classifications and accounting rules
systems thinking	Systems thinking refers to a way of thinking about, and a language for describing and understanding the forces and interrelationships that shape the behavior of systems. This discipline helps us to see how to change systems more effectively, and how to act more in tune with the larger processes of the natural and economic world. Systemic thinking has four main dimensions: 1. thinking in feedback loops and interrelated structures: This dimension of systemic thinking goes beyond one-way cause - effect relations. 2. dynamic thinking: recognizing patterns over time (oscillations, delays), not just events. 3. thinking in (explicit) models, i.e. model-building and distinguishing between reality and models 4. practical steering of systems: the right action at the right time in the right place.
taiapure	a fisheries reserve in an area of special significance to tangata whenua (see Fisheries Act 1996)
tailings	waste materials from mining operations which are generally made up of a mixture of ground-up rock, water, heavy metals and chemicals used to extract precious metals
tangata whenua	People of the land. The Maori iwi or hapu that has mana whenua over a particular area
taonga	valued resources, assets, prized possessions both material and non-material
Tiriti o Waitangi	Treaty of Waitangi
tupuna	ancestor
wahi tapu	special and sacred places
whakapapa	genealogy, ancestry, identity with place, hapu and iwi

Acronyms

AEE	Assessment of environmental effects
ASFF	Australian Stocks and Flows Framework
BSR	Business for Social Responsibility
CBEC	Community Business and Environment Centre
CSD	UN Commission for Sustainable Development
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DOC	Department of Conservation
EECA	Energy Efficiency and Conservation Authority
EEZ	Exclusive economic zone
ESD	Ecologically sustainable development
ESI	Environmental sustainability index
EU	European Union
EWI	Ecological well-being index
FRST	Foundation of Research, Science & Technology
GE	Genetic engineering
GDP	Gross domestic product
GHG	Gross greenhouse gas
GNP	Gross national product
GPI	Genuine progress indicator
HDI	Human development index
HSNO	Hazardous Substances and New Organisms Act 1996
HWI	Human well-being index
ICLEI	International Council for Local Environmental Initiatives
IEA	International Energy Agency
IIED	International Institute for Environment and Development
ISEW	Index of sustainable economic welfare
LGNZ	Local Government New Zealand
MAF	Ministry of Agriculture and Forestry
MEA	Multi-lateral environmental agreement
MED	Ministry for Economic Development
MfE	Ministry for the Environment
MOH	Ministry of Health
MOT	Ministry of Transport
MSP	Ministry of Social Policy
NEECS	National Energy Efficiency and Conservation Strategy
NEPP	National Environmental Policy Plan (Dutch)
NGO	Non-government organisation
NSESD	National Strategy for Ecologically Sustainable Development Australian)
NSSD	National strategy for sustainable development
NZBCSD	New Zealand Business Council for Sustainable Development
NZCBE	New Zealand Centre for Business Ethics
NZCPS	New Zealand Coastal Policy Statement
NZSDS	New Zealand Sustainable Development Strategy
OCEP	Officials Committee on Energy Policy
OECD	Organisation of Economic Cooperation and Development
PCE	Parliamentary Commissioner for the Environment
PHC	Public Health Commission

QMS	Quota management system
RCD	Rabbit calicivirus disease
RCGM	Royal Commission on Genetic Modification
RMA	Resource Management Act 1991
RMLR	Resource Management Law Reform
RPS	Regional policy statement
RTO	Regional tourism operator
SNA	Systems of national accounts
SNZ	Statistics New Zealand
SSC	State Services Commission
TBL	Triple bottom line
TSG	Tourism Strategy Group
UNCED	United Nations Conference on Environment and Development
WCED	World Commission on Environment and Development
WI	Well-being index
WSI	Well-being/stress index
WSSD	World Summit on Sustainable Development

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