

## 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.<sup>1</sup> 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.<sup>2</sup>

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.<sup>3</sup> 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<sup>4</sup>, 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.<sup>5</sup>

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 (NSES). 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.<sup>6</sup>

The concept of ecological sustainability has been established in Australian legislation<sup>7</sup> 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. The 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**

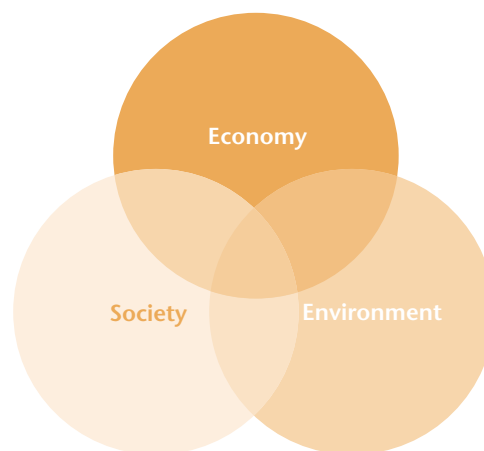
As previously mentioned, there are a variety of interpretations of sustainable development and sustainability. Some regard sustainable development as a matter of integrating social, economic and environmental considerations for decision-making purposes. Others regard it as decision making based on a 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<sup>8</sup> 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.<sup>9</sup> The NZBCSD believes that operating within a well-defined framework of sustainable development helps companies:

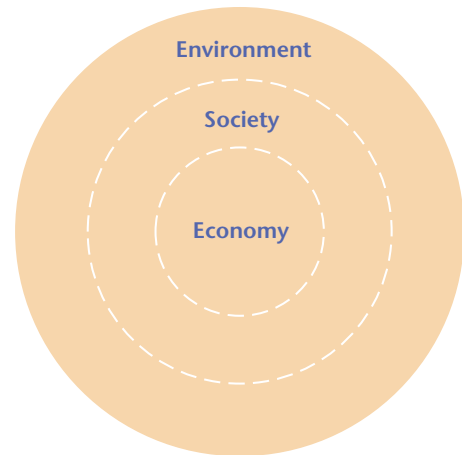
- be more efficient and competitive
- engage in responsible entrepreneurship
- increase their financial return and reduce risk for shareholders
- attract and retain employees
- improve customer sales and loyalty
- grow supplier commitment
- strengthen community relations
- contribute to environmental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

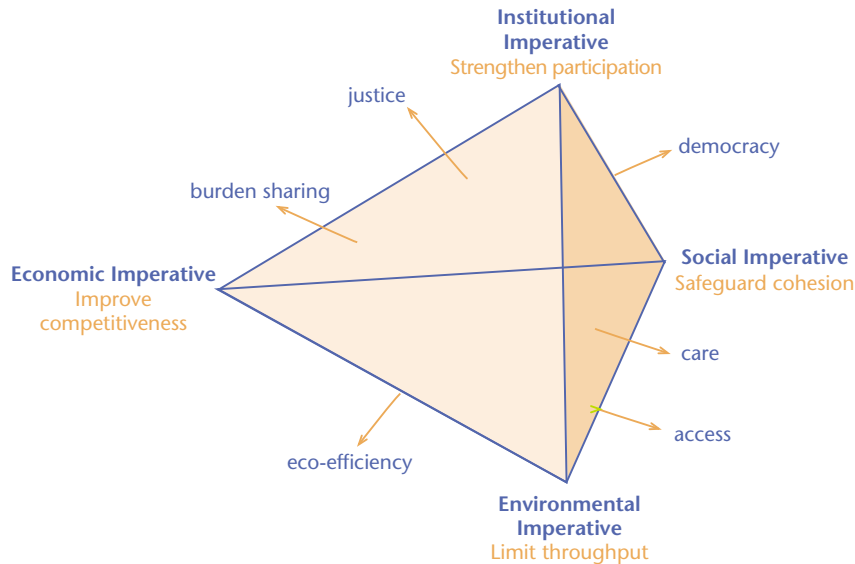
Figure 2.2 Strong Sustainability



This model recognises that the economy is a subset 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<sup>10</sup> 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.<sup>11</sup>

### 2.5.1 Designing effective indicators of sustainability

An international workshop convened by the International Institute for Sustainable Development in 1999<sup>12</sup> 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, particularly in relation 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).<sup>13</sup>
- 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.
- <sup>1</sup> 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.
- <sup>2</sup> 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)).
- <sup>3</sup> Some examples of definitions of sustainable development written between 1979 and 1997 can be found at <http://www.sustainableliving.org/appen-a.htm>.
- <sup>4</sup> See [http://www.sustainable-development.gov.uk/uk\\_strategy/factsheets/summary.htm](http://www.sustainable-development.gov.uk/uk_strategy/factsheets/summary.htm).
- <sup>5</sup> 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).
- <sup>6</sup> Australian National Strategy for Ecologically Sustainable Development (<http://www.ea.gov.au/esd/national/strategy/overview.html>).
- <sup>7</sup> The Environment Protection and Biodiversity Conservation Act 1999 (s 3A) (Australian Federal legislation).
- <sup>8</sup> 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'.
- <sup>9</sup> See the web site of the New Zealand Business Council for Sustainable Development (<http://www.nzbcscd.org.nz/vision.asp>).
- <sup>10</sup> 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."
- <sup>11</sup> 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/>.
- <sup>12</sup> <http://www.iisd.ca/linkages/sd/scipol/>
- <sup>13</sup> 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/>.

