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Introduction

Each year another 6 million hectares of productive dryland turns into worthless desert ... More than 11 million hectares of forests are destroyed yearly ... In Europe, acid precipitation kills forests and lakes ... The burning of fossil fuels puts into the atmosphere carbon dioxide, which is causing gradual global warming. This 'greenhouse effect' may by early next century have increased average global temperatures enough to shift agricultural production areas, raise sea levels to flood coastal cities, and disrupt national economies. Other industrial gases threaten to deplete the planet's protective ozone shield to such an extent that the number of human and animal cancers would rise sharply and the oceans' food chain would be disrupted. Industry and agriculture put toxic substances into the human food chain and into underground water tables beyond reach of cleansing. (*World Commission on Environment and Development, 1987*)

There is now a rapidly developing scientific consensus that environmental problems of global dimensions have developed and that human economic activity has usually been the cause. At the same time, there is a deep reluctance to curtail or modify the activities that are causing these problems. Countries like Australia have a cultural momentum and economic interdependence with other countries that makes impediments to economic growth unthinkable. Sustainable development offers the promise that economic activities can be harmonised with environmental protection, that technologies can be found

and implemented that will ensure economic growth does not harm the environment, and that pressing environmental problems can be solved without social and political disruption.

Historical context

Sustainable development is part of a second wave of modern environmentalism, and heralds a new approach to tackling environmental problems. The first wave of environmentalism was associated with the counter-culture movement of the 1960s and 1970s. It grew out of traditional nature

conservation concerns into an awareness of the potential for a global ecological crisis.

Environmentalists at the time argued that the exponential growth of populations and industrial activity could not be sustained without seriously depleting the planet's resources and overloading the ability of the planet to deal with pollution and waste materials (see chapter 1). Some argued that new technologies and industrial products, such as pesticides and plastics, also threatened the environment (see chapter 5).

First-wave environmentalists, following the protest mood of the times, did not hesitate to blame industry, western culture, economic growth and technology for environmental problems. Although many of the key writers at the time were scientists or industrialists themselves (for example, the Club of Rome), the environment movement was easily characterised as being anti-development. Nevertheless, their warnings captured the popular attention, resonating with the experiences of communities facing obvious pollution in their neighbourhoods.

Although many governments did not recognise the importance of global environmental problems, they were forced by community pressure to respond to local pollution problems. During the 1970s many countries introduced new environmental legislation to cope with the gross sources of pollution. Australian state governments, following the international trend, introduced clean air acts, clean water acts, and legislation establishing regulatory agencies to control pollution and manage waste disposal.

The decade that followed saw a backlash against the early environmentalists. Various writers argued that global catastrophe was the fantasy of doomsday forecasters, and that scientific discoveries and technological innovations would easily cope with any

problems that might arise. Government departments and agencies found it extremely difficult, in this new climate of opinion, to administer properly the legislation that had been put in place at the height of the first wave of environmentalism: businesses did their best to ignore the laws or get around them.

The second wave of environmentalism, which began in the late 1980s, has had much broader support and has involved governments, business people and economists in the promotion of sustainable development. Scientific evidence about the build-up of greenhouse gases in the atmosphere and the depletion of the ozone layer have made it difficult for anyone to deny the threat of global environmental problems. Many of the concerns of environmentalists have been taken up by senior politicians (including prime ministers and ministers of foreign affairs, of finance and agriculture) from countries around the world, as well as eminent scientists, jurists and international bureaucrats.

Sustainable development has succeeded in arenas of influence denied to first-wave environmentalism because of its central idea that environmental protection is not necessarily opposed to development. The concept of sustainable development accommodates economic growth, business interests and the free market and therefore does not threaten the power structure of modern industrial societies.

Many of the ideas associated with sustainable development had been previously articulated in the 1980 World Conservation Strategy produced by the International Union for Conservation of Nature and Natural Resources (IUCN) in collaboration with the UN Environment Programme (UNEP) and the World Wildlife Fund (WWF, now the

World Wide Fund for Nature). This document, which was circulated to all governments, defined conservation as:

the management of human use of the biosphere [the thin covering of the planet that sustains life] so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations.

The World Conservation Strategy argued that while development aimed to achieve human goals through the use of the biosphere, conservation aimed to achieve those same goals by ensuring that use of the biosphere could continue indefinitely.

National conservation strategies based on this World Conservation Strategy were adopted in fifty countries including Australia, which adopted a national conservation strategy in 1984 following two conferences and 550 submissions (Department of Home Affairs and Environment 1984). The Australian national conservation strategy, like the World Conservation Strategy, argued that development and conservation were different expressions of the one process and that economic growth could be achieved through a more appropriate use of resources. It called for sustainable modes of development, a new international economic order, a new environmental ethic and population stabilisation.

The World Conservation Strategy and the Australian equivalent have had little impact and few people have even heard of them. However, in the mid-1980s the World Commission on Environment and Development rejuvenated the concept in its report *Our Common Future*, (also referred to as the Brundtland Report, named after the commission's chair, Gro Harlem Brundtland, who was prime minister of Norway at the time). In October 1987, the goal of sustain-

able development was largely accepted by the governments of one hundred nations and approved in the UN General Assembly.

The commission defined sustainable development as:

development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Although the above definition is the one that is most often quoted, there are many definitions of sustainable development and it has been argued that interest groups define sustainable development to suit their own goals. However the idea of sustainable development embodies certain common concepts and assumptions. This book sets out to give the reader a unified, comprehensive understanding of what sustainable development is all about.

Sustainable development in Australia

In June 1990, the Commonwealth Government released a discussion paper on ecologically sustainable development (ESD). Shortly afterwards, it set up working groups to study how sustainable development would be applied to nine different industry sectors that were thought to use or have a significant impact on natural resources. These sectors were:

- agriculture
- energy use
- energy production
- transport
- mining
- fisheries
- forest use
- tourism
- manufacturing

Membership of the working groups comprised representatives from government, industry, unions, consumer/social welfare organisations and conservation groups. In addition there were a number of academics and CSIRO scientists. The groups were, however, dominated by bureaucrats from state and federal government departments, particularly those from development-oriented departments such as the Department of Primary Industries and Energy (DPIE).

Only two environmental groups took part: the Australian Conservation Foundation and the World Wide Fund for Nature. These groups were provided with finances by the Commonwealth Government to enable them to participate fully. Greenpeace Australia pulled out of the process after the government signalled its intention to pass resource security legislation which would guarantee companies access to natural resources in some areas. Other groups were not invited or chose not to take part.

The working groups produced draft reports in 1991 which were made available for public comment. A few 'community consultation forums' were held to enable working group members to get a feel for community concerns and the priorities the community accorded to various issues. A 'public attitudes survey' was also taken (of approximately 2400 people) to give the working groups and the government some idea of how much the community knew and cared about the environment and sustainable development and to see what they thought of the working group reports. The public consultation process did meet with some criticism at the time, because the forums were very limited in number and scope (For example, one day in total in Sydney and one in Dubbo for the whole of NSW), and because very little public discus-

sion was promoted outside the forums or in the media.

The final ESD working group reports were issued at the end of 1991 and were followed up in early 1992 with two other reports compiled by the three people chairing the groups. One report was on the greenhouse effect; the other covered issues such as health, population, urban issues, coastal issues, employment and equity.

For those who took part in the working-group process, it was a worthwhile exercise. They found it useful to discuss environmental issues with people they had formerly opposed and to work out areas of agreement and disagreement. It was claimed the process had enabled them to break the entrenched hostility and mistrust that had marked environmental debate in Australia up to that time. There was said to be a surprising degree of consensus between those taking part.

However, there were also criticisms. Environmentalists felt that intersectoral issues—those that overlapped various industry sectors—were not properly dealt with because of the way the groups were divided up. Others were troubled by the way the groups operated. They argued that attempts to reach consensus on the content of the reports and their recommendations required contentious issues or recommendations to be left out. This meant that the groups concentrated on the more conservative and 'safe' policy options, and recommendations were aimed more at gradual, incremental change rather than more radical, dramatic change.

The degree of public involvement and debate over the issues has also been criticised by those not included on the working groups. The working group discussions were not open and their very existence tended to

remove discussion about sustainable development from the public arena to closed meetings of select people. Dissenters outside the process were marginalised.

However, even the parties involved in the working groups are unhappy with the way the Commonwealth Government subsequently treated their reports and recommendations. Environmental groups, business groups and others were disappointed with the watered-down reports produced by the government.

At the international level, talks and negotiations have been held between national governments to work out international responses to the environmental problems facing the world. These talks recently culminated in the Earth Summit in Rio de Janeiro in June 1992. For many, the Earth Summit was disappointing. No specific targets could be agreed on for the reduction of greenhouse emissions. The US refused to sign the Biodiversity Treaty. Agenda 21, a program of action for the twenty-first century to be undertaken by all nations, was criticised as being weak and lacking any strong statements on some of the more important yet contentious issues such as population control, consumption by people in affluent countries and the role of transnational corporations.

Yet for those who took part, as in the case

of Australia's ESD process, it was useful to come together and exchange views, come to some agreements and set other processes in motion. They argued that there was great symbolic value in having so many heads of state coming together to discuss environmental problems in what was the largest gathering of its kind in history. Non-governmental organisations also took the opportunity to hold their own forum across town from the summit, where they formulated their own treaties and formed beneficial alliances.

The Australian working groups and the Earth Summit have been early manifestations of an unprecedented degree of consensus that the concept of sustainable development seems to have achieved about the desirable direction and thrust of environmental policy. Sustainable development draws its strength from the recognition by governments, economists, industry groups and others that modern societies cannot continue to develop in the ways they have in the past, with little attention being paid to protecting the environment. Sustainable development is the principal mechanism that these decision-makers intend to use to solve the environmental crisis. It is therefore vital that the wider public understands what it means and can judge for themselves how effective it will be.

CHAPTER 1

What is sustainable development?

The most commonly used definition of sustainable development is that given by the World Commission on Environment and Development in their report, *Our Common Future*:

Sustainable development = development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (1990, p. 87)

This means that economic activity which is carried out now to meet current requirements should not degrade or deplete the environment so much that people will not be able to meet their needs in the future. Future generations might not be able to meet their needs if the soil is degraded, natural resources such as fisheries and forests are used up, or waterways are badly polluted.

The part that is hard to define is 'needs'. What are 'needs'? People obviously need food, clothing and shelter—but do they also need cars, air conditioners, portable phones and speedboats? Do they need to live on a

planet with a wide variety of plants and animals? Needs are shaped by cultural, communal and individual values. In its definition of ecologically sustainable development, the Commonwealth Government avoids the difficulty of defining 'needs' by not mentioning them:

Ecologically sustainable development means using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained and the total quality of life, now and in the future, can be increased. (*Commonwealth Government 1990, preface*)

However, the phrase 'total quality of life' raises similar questions to those raised by the term 'needs'. What are the essential elements of a person's quality of life? Again, these will be culturally determined, and will vary with community and individual values. Some people consider that their lives will only have quality if they have easy access to pristine, unspoilt environments, or are able to walk to work in pleasant surroundings.

Others may feel that their quality of life depends on having air conditioning in their cars, or being able to afford the latest fashions each year.

The government has further expanded this definition by setting out some principles of ecologically sustainable development (Commonwealth Government 1990, pp. 3–10):

Integrating environmental and economic goals in policies and activities

This involves aiming for both economic growth and environmental protection at the same time, and assumes that these goals can be compatible. (This is discussed further in chapter 3.) In certain circumstances, where these goals do conflict, the government argues that the costs and benefits of alternative courses of action should be compared. (The problems associated with cost-benefit analysis are discussed further in chapter 7.)

Ensuring that environmental assets are appropriately valued

The government believes that, if people pay proper prices that reflect the real value of environmental resources, these resources will not be used in a wasteful way. However, it recognises that different people will give different weightings to economic, ecological, aesthetic and ethical values, and that in some cases putting a price on an environmental resource might be difficult or even inappropriate. (Valuation of environmental resources is discussed further in part 2.)

Providing for equity within and between generations

This principle raises the questions of how fairly the community's assets, including natural resources and human-created capital, are shared at present and to what extent we should ensure that future generations are

left with a similar environment and stock of capital. Can future generations be compensated where natural resources are used up, as in the case of non-renewable resources such as minerals and oil? How can people who are badly affected by changes required to achieve sustainability be compensated? (These questions are addressed in part 4.)

Dealing cautiously with risk and irreversibility

The government recognises that it is sensible to be cautious where environmental impacts might be irreversible or may be difficult and slow to reverse even if such outcomes are uncertain. It argues that in some cases it may be best to pay a small cost to prevent future environmental damage but that in others it may be better to put up with some environmental damage in order to get the economic benefits. (This is discussed further in part 3.)

Recognising the global dimension

The government is not only referring to the fact that some environmental problems such as ozone depletion have global dimensions and that Australia should be careful not to impose environmental damage on other countries through its actions. It is also arguing that enduring some environmental degradation in Australia might be better than having polluting activities done elsewhere. (This is discussed further in part 4.)

In these principles and definitions, sustainable development is human centred; that is, it is primarily concerned with maintaining human welfare through meeting human needs and ensuring the quality of human life. The Rio Declaration on Environment and Development, agreed to by over 170

AUSTRALIAN MAINSTREAM ENVIRONMENT GROUPS PRINCIPLES OF SUSTAINABLE DEVELOPMENT

Inter-generational equity

The present generation should ensure that the next generation is left with an environment that is at least as healthy, diverse and productive as the one the present generation experiences. Owing to the massive and irreversible rate of loss of species and habitats at present, we have an additional responsibility to give the highest priority to conserving the world's natural environment and species.

Conservation of biodiversity and ecological integrity

Conservation of biodiversity and the protection of ecological integrity should be a fundamental constraint on all economic activity. The non-evolutionary loss of species and genetic diversity needs to be halted and the future of evolutionary processes secured.

Constant natural capital and 'sustainable income'

Natural capital (e.g. biological diversity, healthy environments, freshwater supplies, productive soils) must be maintained or enhanced from one generation to the next. Only that income which can be sustained indefinitely, taking account of the biodiversity conservation principle, should be taken.

Anticipatory and precautionary policy approach

Policy decisions should err on the side of caution, placing the burden of proof on technological and industrial developments to demonstrate that they are ecologically sustainable.

Social equity

Social equity must be a key principle to be applied in developing economic and social policies as part of an ecologically sustainable society.

Limits on natural resource use

The scale and throughput of material resources

will need to be limited by the capacity of the environment to both supply renewable resources and assimilate wastes.

Qualitative development

Increases in the qualitative dimension of human welfare and not the quantitative growth in resource throughput is a key objective.

Pricing environmental values and natural resources

Prices for natural resources should be set to recover the full social and environmental costs of their use and extraction. Many environmental values cannot be priced in monetary terms and hence pricing policies will form part of a broader framework of decision making.

Global perspective

A global perspective is needed to ensure that Australia does not simply move its environmental problems elsewhere.

Efficiency

Efficiency of resource use must become a major objective in economic policy.

Resilience

Economic policy needs to focus on developing a resilience to external economic or ecological shocks. A resource-driven economy is unlikely to be resilient.

External balance

Australia's economy needs to be brought into balance. External imbalance creates pressure to deplete natural capital and could undermine the prospect for an ecologically sustainable economy.

Community participation

Strong community participation will be a vital pre-requisite for effecting a smooth transition to an ecologically sustainable society.

countries at Rio de Janeiro in June 1992, has the following first principle:

Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature. (UNCED 1992, p. 1)

Sustainable development does not guarantee the needs or quality of life of animals or other living organisms, except in so much as this will benefit humans. For some environmentalists, this concept does not go far enough. They argue that all living creatures have an inherent right to exist that is separate from their usefulness or value to humans. This idea is not accepted by all environmentalists and is not explicitly stated in the principles set forward by environmental groups.

The four largest environmental groups in Australia (the Australian Conservation Foundation, Greenpeace (Australia), The Wilderness Society and World Wide Fund for Nature—Australia) have put together a list of principles for sustainable development that have some overlap with and also some differences from those of the Commonwealth Government. Perhaps the most significant differences lie in their call for conservation of biodiversity and ecological integrity, and for limits on natural resource use. Their principles are reproduced in full on page 5.

The international environmental organisations that originally put together the World Conservation Strategy in 1980 (IUCN, UNEP and the WWF) have also put together a set of principles for sustainable development. These were published in 1992 in a report entitled *Caring for the Earth: A Strategy for Sustainable Living*, and are reproduced on pages 7–8. These principles, like those of

the Australian environmental groups, place more emphasis on maintenance of biodiversity and the earth's natural limits.

Despite these differences of emphasis and priority, there is clearly significant overlap between the Commonwealth Government's principles of sustainable development and those of the mainstream environmental groups. The differences in philosophy and approach become more obvious at the specific policy level. However, it is the general agreement between environmentalists and government and, indeed, business groups about the broad goals and concepts associated with sustainable development that has made it such a popular and widely used term. These goals and concepts are elaborated throughout this book.

One key point of agreement between environmental groups, business groups and the government is that economic activity and environmental quality are closely inter-related. Sustainable development involves the recognition that environmental factors have not been given enough consideration in the past and that this may have a long-term detrimental impact on economic activity and living standards.

Most societies depend heavily on economic activity such as agriculture, mining and manufacture to satisfy the needs and desires of their populations. It has long been recognised that economic activity can damage the environment. It is now being recognised that environmental degradation can, in turn, affect economic activity. What was previously seen as a one-way relationship is now being seen as a two-way interaction.

It is this relationship which will be explored in more depth in the next chapter.

INTERNATIONAL ENVIRONMENTAL ORGANISATIONS PRINCIPLES OF SUSTAINABLE DEVELOPMENT

Respect and care for the community of life

This principle reflects the duty of care for other people and other forms of life, now and in the future. It is an ethical principle. It means that development should not be at the expense of other groups or later generations. We should aim to share fairly the benefits and costs of resource use and environmental conservation among different communities and interest groups, among people who are poor and those who are affluent, and between our generation and those who will come after us.

All life on earth is part of one great interdependent system, which influences and depends on the non-living components of the planet—rocks, soils, waters and air. Disturbing one part of this biosphere can affect the whole. Just as human societies are interdependent and future generations are affected by our present actions, so the world of nature is increasingly dominated by our behaviour. It is a matter of ethics as well as practicality to manage development so that it does not threaten the survival of other species or eliminate their habitats. While our survival depends on the use of other species, we need not and should not use them cruelly or wastefully.

Improve the quality of human life

The real aim of development is to improve the quality of human life. It is a process that enables human beings to realize their potential, build self-confidence and lead lives of dignity and fulfilment. Economic growth is an important component of development, but it cannot be a goal in itself, nor can it go on indefinitely. Although people differ in the goals that they would set for development, some are virtually universal. These include a long and healthy life, education, access to the resources needed for a decent standard of living, political freedom, guaranteed human rights, and freedom from

violence. Development is real only if it makes our lives better in all these respects.

Conserve the Earth's vitality and diversity

Conservation-based development needs to include deliberate action to protect the structure, functions and diversity of the world's natural systems, on which our species utterly depends. This requires us to:

- *Conserve life-support systems.* These are the ecological processes that keep the planet fit for life. They shape climate, cleanse air and water, regulate water flow, recycle essential elements, create and regenerate soil, and enable ecosystems to renew themselves;
- *Conserve biodiversity.* This includes not only all species of plants, animals and other organisms, but also the range of genetic stocks within each species, and the variety of ecosystems;
- *Ensure that uses of renewable resources are sustainable.* Renewable resources include soil, wild and domesticated organisms, forests, rangelands, cultivated land, and the marine and freshwater ecosystems that support fisheries. A use is sustainable if it is within the resource's capacity for renewal.

Minimize the depletion of non-renewable resources

Minerals, oil, gas and coal are effectively non-renewable. Unlike plants, fish or soil, they cannot be used sustainably. However, their 'life' can be extended, for example, by recycling, by using less of a resource to make a particular product, or by switching to renewable substitutes where possible. Widespread adoption of such practices is essential if the Earth is to sustain billions more people in future, and give everyone a life of decent quality.

Keep within the Earth's carrying capacity

Precise definition is difficult, but there are finite limits to the 'carrying capacity' of the Earth's

ecosystems—to the impacts that they and the biosphere as a whole can withstand without dangerous deterioration. The limits vary from region to region, and the impacts depend on how many people there are and how much food, water, energy and raw materials each uses and wastes. A few people consuming a lot can cause as much damage as a lot of people consuming a little. Policies that bring human numbers and life-styles into balance with nature's capacity must be developed alongside technologies that enhance that capacity by careful management.

Change personal attitudes and practices

To adopt the ethic for living sustainably, people must re-examine their values and alter their behaviour. Society must promote values that support the new ethic and discourage those that are incompatible with a sustainable way of life. Information must be disseminated through formal and informal educational systems so that the policies and actions needed for the survival and well-being of the world's societies can be explained and understood.

Enable communities to care for their own environments

Most of the creative and productive activities of individuals or groups take place in communities. Communities and citizens' groups provide the most readily accessible means for people to take socially valuable action as well as to express their concerns. Properly mandated, empowered and informed, communities can contribute to decisions that affect them and play an indispensable part in creating a securely-based sustainable society.

Provide a national framework for integrating development and conservation

All societies need a foundation of information and knowledge, a framework of law and institutions, and consistent economic and social policies if

they are to advance in a rational way. A national programme for achieving sustainability should involve all interests, and seek to identify and prevent problems before they arise. It must be adaptive, continually redirecting its course in response to experience and to new needs. National measures should:

- treat each region as an integrated system, taking account of the interactions among land, air, water, organisms and human activities;
- recognize that each system influences and is influenced by larger and smaller systems—whether ecological, economic, social or political;
- consider people as the central element in the system, evaluating the social, economic, technical and political factors that affect how they use natural resources;
- relate economic policy to environmental carrying capacity;
- increase the benefits obtained from each stock of resources;
- promote technologies that use resources more efficiently;
- ensure that resource users pay the full social costs of the benefits they enjoy.

Create a global alliance

No nation today is self-sufficient. If we are to achieve global sustainability a firm alliance must be established among all countries. The levels of development in the world are unequal, and the lower-income countries must be helped to develop sustainably and protect their environments. Global and shared resources, especially the atmosphere, oceans and shared ecosystems, can be managed only on the basis of common purpose and resolve. The ethic of care applies at the international as well as the national and individual levels. All nations stand to gain from sustainability—and are threatened if we fail to attain it.