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The search for sustainable development

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7.1 Introduction

The underlying question for this book is: 'What are international environmental problems and why are they important politically?'. We have now examined this question from the different perspectives of the natural sciences, sociology, politics, law and economics. In this way we have emphasised that environmental problems, even those that are ostensibly localised, have an international context that must be addressed through policy arrangements that transcend the national state. The discussion has also focused on environmental problems as both physical and social problems. Consequently, it has been shown that the solving of environmental problems is both a scientific/technical and a social/political matter.

This chapter is a synthesis and development of the foregoing, the emphasis shifting from the environmental problems of the present to the environmental needs of the future. It focuses on the idea of *sustainable development*, which was the *leitmotif* of the Brundtland Report in 1987 and which became the accepted goal of policy makers at the Earth Summit in Rio de Janeiro five years later. Sustainable development is a *concept* that incorporates the problems of environment and development. It is also a *strategy* that informs policy making for both environment and development. In the oft-quoted phrase of the Brundtland Report, sustainable development is development that 'meets the needs of the present without compromising the ability of future generations to meet their own needs'. Thus, sustainability is viewed primarily in terms of human survival.

The concept of sustainable development recognises the natural limits imposed by the ability of the biosphere to absorb the effects of human activities. It also underlines the threat to environmental resources created by the present state of technology and social organisation. Consequently, in terms of present policy dealing with future requirements, sustainability must meet two criteria. First, ecological systems must be

protected and maintained in such a way that the existing and putative benefits they contain are not denied to future generations. Secondly, ecological systems should not be altered or interfered with in such a way as to impose risks on future generations.

On the whole, the Brundtland Commission is optimistic in its ideas about the cure. Technology and social organisation can be improved to handle both the problems of the carrying capacity of the environment and problems of poverty and (under)development. Moreover, the Commission states that, far from requiring the cessation of economic growth, a new era of economic growth is necessary. This is an era in which integration of environment and development is required in all countries, rich and poor (WCED, 1987).

Sustainable development is now widely accepted both as a diagnosis and cure for the world's environmental problems. The idea of a sustainable development is, in principle, attractive and as a result has been appropriated by a wide range of often conflicting interests. Business people use it to gild their green image; environmentalists claim it to enhance their credibility; politicians enjoy the free publicity it brings. There is much rhetoric surrounding the simple expression of the idea and it can satisfy many different agendas. The concept of sustainable development can easily be dismissed as 'all things to all people', a concept so vague as to be almost meaningless. Indeed, it has been described as a cliché, a passing fashion, even as an oxymoron. 'Despite the apparent contradiction, creating wealth without destroying the natural resource base is unquestionably an attractive quest, even if it turns out to be something like the Holy Grail' (Friend, 1992, p 157). More sceptical still is the argument that 'sustainable development is in reality a means for the continuing legitimation of "global" strategies of development, which ensure the continued hegemony of the northern, industrialized countries' (Redclift, 1993, p 5). Linking development to sustainability allows one to portray an optimistic vision which suggests that the threats to the environment can be managed by marginal and incremental changes in behaviour, without undermining fundamentally the lifestyles enjoyed by the wealthier nations.

The aim of this chapter is to come to a better appreciation of the meaning and implications for policy of sustainable development. Our main argument, following on the lines of Chapter 1, is that sustainable development should be seen in terms of development and distribution problems that involve conflicts of interest. The present chapter also emphasises the major political and economic constraints to the achievement of sustainable development. The nature of the social changes that will be necessary in order to achieve sustainable development will be indicated and we shall examine the reasons why such changes may be resisted.

7.2 Distribution and development

Sustainable development as a practical concept for international policy making cannot be discussed in isolation from the general structures of the world's economic systems. However, a discussion which starts with this issue is not easy. In one sense it is possible to speak of an international capitalist economic system as the dominant global organisational principle. However, once the relationship between the economy and the environment is introduced, it is clear that there is a complex pattern of contrasting

regions and countries in the world. Various categories of countries can be distinguished, for example, the countries of the European Union (EU). But within this category there are various possible subdivisions that reflect major differences in environmental conditions and levels of economic development. The pursuit of uniform environmental regulations reveals the different economic interests. It could be observed that the most developed countries (e.g. Germany, The Netherlands, Denmark) usually take the lead in organising their environmental law. Their attempts at achieving uniform regulations across the EU are hampered by the less developed countries, which want to secure the same level of development first.

At a broader European level, the picture changes dramatically. Although there are economic differences among the formerly communist Eastern European countries, they have all experienced widespread environmental deterioration. This is not to say that there are no environmental problems in the EU countries, but especially in Western Europe, environmental problems are associated with high income and high consumption levels. In other European countries environmental degradation goes hand in hand with low income and low consumption levels. In this respect, the Western European countries are more closely related to other rich parts of the world (USA, Japan, Canada, etc.). They belong to the 20% richest countries which consume 80% of the world's natural resources.



Plate 7.1 Contrast between rich and poor: a shanty town in Bombay, India. Photo: Ron Giling/Linear

This picture becomes even more complicated when we bring other parts of the world into it. Two more categories of nations can be distinguished. First, there are the low-income countries undergoing rapid economic development, often known as Newly Industrialising Countries (NICs), such as Taiwan, Malaysia, Korea or the Philippines in South-East Asia. Booming economic growth in these countries often goes side by side with neglect of the environmental effects. Secondly, the poorest developing countries, often rich in natural resources, experience low income, low consumption and population pressure, together with heavy exploitation of natural resources.

The process of development in the poorer countries is closely linked with economic growth in the richest countries. Under the current economic system rich countries purchase natural resources from poor countries, allowing economic growth in both the developed and some of the developing countries. However, the resources traded are, for the most part, limited and non-renewable. Furthermore, after trading, the land is usually left scarred and devastated. The income derived from this trading seldom adds much to the welfare of the local citizens. It is, in most cases, the big landowners and multinational corporations who stand to make the biggest profit. This is precisely what is happening to the harvest of wood in rainforests all over the world.

The foregoing is only a rough sketch of the link between environmental degradation and distributional and development issues. Terhal (1992) has made an analytical distinction between 'unsustainability of poverty' and 'unsustainability of affluence', as follows:

- The first form of unsustainable development is associated with low per capita income and consumption levels, demographic pressure and direct links between

Population, environment and development

A major political conflict exists over the relationship between population and environmental degradation. From a northern, developed perspective it is customary to emphasise the importance of population growth and to urge policies of population restraint on the South. Conversely, southern countries point to the high per capita consumption of resources as the primary cause of environmental deterioration. Both have a point.

On a global scale, environmental degradation is a product of population multiplied by average resource use. For illustrative purposes we may use an average per capita energy consumption of 2 kw. Development introduces the problem of inequalities in resource use. For example, per capita energy consumption may be 1 kw in the South but ten times as high in the North. But in terms of pressure on the environment, both population numbers and consumption per head of the population are important. Therefore, neither a policy of population restraint nor one of reduction in per capita consumption is likely to achieve sustainability. A reduction in consumption levels will not compensate for the rapid upsurge in population levels, which are expected to reach a global total of 8 billion by 2025 from about 5 billion in 1990. Both population restraint and a reduction in per capita levels of resource consumption and pollution will be necessary.

resource exploitation and (insufficient) basic needs fulfilment. This results in environmental degradation, which in turn leads to continued poverty.

- The second form is associated with high per capita income and consumption levels and high levels of investment and resource exploitation, which also leads to exhaustion of resources and large-scale environmental degradation.

In Terhal's view it is of vital importance for the design of 'sustainable development' to recognise the links between the two models, in particular how 'unsustainability of affluence' impinges on 'unsustainability of poverty'. Furthermore, he stresses the danger of the temptation to look for a way out in which the 'unsustainability of poverty' is replaced by the 'unsustainability of affluence' (Terhal, 1992, p. 132–33) (see also Box 1).

It is clear that there are no universal models with universal solutions. Major changes in both types of development, in relation to each other, seem to be necessary, a point to which we shall return.

7.3 The meaning of sustainable development

The previous section has illustrated the complexity of the notion of sustainable development. Sustainable development combines both scientific principles and human values (see Box 2). Once natural processes are affected by human processes, sustainability becomes endowed with social meaning. Once values are applied, sustainable development becomes a matter for interpretation by different groups or interests in society. It acquires ideological overtones as a motivating purpose for society. On closer examination, the concept proves to be complex, demanding careful interpretation of its component parts. The concept therefore has to be interpreted in terms of the interests it serves. And if it is to be a useful concept for policy making, it needs to be clarified in order that objectives can be established, implemented and monitored. This problem of clarification arises with the well-known Brundtland definition of sustainable development as *development that meets the needs of the present without compromising the ability of future generations to meet their own needs*. Within this phrase there are three concepts in particular that require interpretation and more precise definition. These are: development, needs and future generations.

The concept of development

Development is not synonymous with economic growth, though the two are often confused. Economic growth refers to a quantitative expansion of the prevailing economic system. Development is a qualitative concept which incorporates ideas of improvement and progress and includes cultural and social as well as economic dimensions. Furthermore, the concept of development focuses on the relative distribution of scarce resources. This raises two problems. The first is the *problem of scarcity* of resources and its implications for environmental sustainability. A key discussion here is how to measure the cost of using resources in terms of impact on the environment. The second is the *problem of the unequal distribution of resources* and its implications for the achievement of sustainable development. It is here that the

Sustainable development: a scientific and social concept

Sustainability is a scientific principle indicating the notion of natural systems enduring over time. *Development* is a social science concept relating to the progress of human systems. Taken together, *sustainable development* can be defined as 'a relationship between dynamic human economic systems and larger, dynamic, but normally slower-changing ecological systems, such that: (a) human life can continue indefinitely; (b) human individuals can flourish; (c) human cultures can develop; but in which (d) effects of human activities remain within bounds so as not to destroy the health/integrity of the environmental context of human activities' (Norton, 1992, p. 106). It should be noted, in passing, that this definition is anthropocentric. Sustainable development tends to take a utilitarian view of the protection of species, i.e. their importance tends to be seen in terms of their value (actual or potential) to human survivability.

concepts of sustainability and development become intertwined. It is contemporary patterns of economic growth that threaten sustainability and it is the process of uneven development that inhibits the achievement of sustainable policies. How to handle uneven development and the resulting inequality is at the heart of the problem of sustainable development.

The concept of needs

The concept of *needs* also introduces the question of the distribution of resources. The Brundtland Commission is ambivalent on this issue: 'Sustainable development requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life' (p. 44). However, 'basic needs' is a relative concept, since in the richer parts of the world what were once regarded as luxuries are now regarded as necessities. As material standards have improved, so per capita consumption of natural resources and production of pollution has risen. In the poorer countries, meanwhile, the pressure on the environment to meet basic needs creates widespread degradation of natural systems. If the poor are to satisfy their aspirations to a better life, then the burden on the environment will quickly become intolerable. On a world scale, the prospect of maintaining the standards of the rich while improving the conditions of the poor is clearly impossible under present economic systems. This raises, implicitly, the issue of responsibility. The poor nations place responsibility for global environmental degradation firmly at the door of the rich. Consequently, the rich must both reduce their claims on the environment's resources and, at the same time, provide help to the poor to achieve more sustainable practices. Conversely, the rich countries endeavour to promote the idea of a shared responsibility, so that all contribute to ensuring environmental security.

The concept of future generations

Coming next to the concept of *future generations*, we encounter the problem of needs in a different context. Sustainability is essentially about the future and what we should hand on. A pragmatic argument often encountered here is that we pass both benefits and costs down to future generations and that it is difficult to weigh one against the other. For example, how can we balance the benefit of urban parks against, say, toxic waste dumps inherited from the Victorian Age? At its most basic level, sustainability is a concept of stewardship: 'We have a moral duty to look after our planet and to hand it on in good order to future generations' (HMSO, 1990, p. 10). In the more precise terms of sustainable development it is clear that we should not hand on the environment as it stands but strive to improve those areas that are heavily degraded or socially deprived, so that future generations are not burdened by inherited problems. Similarly, we should avoid inflicting irreversible damage or imposing a higher level of risk than we currently experience. Indisputably, we have already breached these criteria by the destruction of species and the production of toxic and radioactive materials which will present risks for generations to come. Our actions in the present may very well deny future generations the resources they need (or might discover they can use). They may also have to devote energy and ingenuity to the safe management of dangerous materials consigned to them. We should not assume that future generations will possess the resources, knowledge or ability to deal with environmental problems inherited from a bygone age (see Box 3).

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Discounting the future

Discounting is a concept devised by economists and employed by government and business, which expresses future liabilities in terms of present costs. Discounting assumes that money can be invested now and accumulate interest. Consequently, a discount rate can be applied which ensures at least that money invested now will yield sufficient return to defray future liabilities. Anything over this will be profit. To take an example, £1 invested now, at a 5% discount rate, will be worth £1.05 in a year's time.

Discounting reflects the tendency for people to prefer income now rather than later. While it works reasonably well for defined projects over short time spans, discounting over long periods faces major uncertainties. The assumptions of continuing economic growth (hence security of the investment) and of technical capability to deal with liabilities become more doubtful over time. 'Philosophically, discounting the future at a particular annual rate means that the future is treated as progressively less and less important the further ahead we look' (SPRU, 1994, p. 29). For instance, in the case of decommissioning a nuclear power plant, discounting at a low rate of 2% over a century or more may appear reasonable now but it assumes continuing economic growth over the whole period, political and institutional stability and a technical capacity to deal with today's technology by future generations. The future is literally discounted and burdens are bequeathed to future generations who may have neither the resources nor the capabilities for dealing with them.

7.4 Principles and problems for policy making

Once we begin to investigate the social meaning of sustainable development, we find it becomes a very elusive concept indeed. The concept is prey to all kinds of interpretations to support different interests. This makes it very difficult to tie it down in terms of specific policies to achieve sustainability. Conflict is inherent in any attempt to secure agreement on the evidence, the objectives, the instruments and the implementation of policy. The following principles for policy making can be extracted from our discussion so far:

- Sustainable development requires an emphasis on resource conservation. This necessity has long been recognised for non-renewable resources. It is now recognised that the principle applies to the conservation of the global commons hitherto treated as an infinite resource. This principle involves a fundamental shift from human systems which exploit, pollute and degrade the environment to those which preserve and protect it.
- Sustainable development requires greater equality of access to natural resources and some redistribution of wealth from rich to poor. Sustainable policies are more likely to be supported if they are seen to be equitable. Under the present economic and political systems some countries are able to exploit global resources while others may be denied the use of resources, even those on their own territory. Redistribution of wealth can be achieved in various ways through the transfer of aid, technology and investment. Aid policies have often, in the past, led to unsustainable forms of development. In the future, redistribution will need to be linked to sustainable development.
- Sustainable development requires that the present generation desist from those activities which may rob or imperil the future. Contemporary systems of development tend to discount or ignore the claims of the future, particularly the more distant future, which has few claims upon the present.

Taken seriously, these principles present a very radical agenda indeed. They insist that policies for sustainable development should: prevent further destruction of habitats; reduce pollution at least to levels which do not violate the Earth's regenerative capacity; abandon activities which consign to future generations problems of clean-up and risk to health or survival; and, on top of all this, deliver a redistribution of resources that will guarantee a commitment to sustainable development. In short, sustainable development implies a fundamental change in technology, economy and society. New policies and new institutions will be needed if sustainability is to be achieved. But, fundamental changes are only likely to be acceptable if the evidence for policies is scientifically credible and if the alternative forms of institution are politically feasible.

The problem of scientific evidence

Before policies to achieve sustainability can be developed, it is necessary to have some idea of the problems being addressed and the scope of measures to deal with them. But here we encounter the problem of uncertainty and conflict over the evidence, itself a major cause and justification for political procrastination. In the face of uncertainty, scientists have appealed to the precautionary principle. In brief, this means that action



Plate 7.2 A ricefield in Bali, Indonesia: sustainable development? Photo: Ron Giling/Linear

should be taken now to avoid possible deleterious future impacts, even if the scientific evidence for taking action is uncertain or inconclusive. In the words of the Rio Declaration on Environment and Development: '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'. The principle is, however, difficult to apply, precisely because of the nature of the evidence.

As Chapter 2 has shown, scientists have had a major impact on environmental policy. It can be argued that scientists through their observations have discovered environmental problems in the first place. This is certainly true for ozone depletion and global warming, which are 'invisible' problems. It is also true that science has caused the problems in the sense that applied scientific knowledge has produced processes capable of polluting and degrading natural ecosystems. Furthermore, scientists are often called upon to find the cause of problems and hence suggest appropriate solutions. Such solutions often involve changes in human systems to ensure that natural systems remain intact.

Willingness to change depends in part on the nature and certainty of the scientific evidence that justifies human action. In very general terms we may say that action is most likely to occur when the evidence of cause is conclusive, the consequences are clear and the proposed action is feasible. The example of ozone depletion fits all three criteria. The scientific evidence was sufficiently conclusive both as to the cause (CFCs and other gases) and the consequences (a hole in the ozone layer that would increase cancers and cataracts), so that political agreement on the phasing out of CFCs could be

reached. Action was feasible, since the production of CFCs was confined to a relatively few countries and substitutes were available. Even here, however, there are complications, since the substitutes are not themselves entirely environmentally benign, not all countries have agreed to the protocols and it is not clear whether the agreements will have the desired effect in time. The disruption to social systems was very slight. Even so, implementation of the agreements may prove difficult.

It is more difficult to secure change if the evidence of harm is reasonably clear but the probability of occurrence is not. For example, we continue to use nuclear power despite the evidence that, either through routine emissions or through accidents, the consequent radioactivity is harmful to human health. There may be a variety of reasons for this. Perhaps we do not think the evidence of harm is sufficiently worrying or conclusive; perhaps the probabilities of harmful effects are sufficiently low for us to take a gamble on safety; perhaps we believe that the security and safety of nuclear systems are improving; or that alternatives to nuclear energy are not immediately available and are themselves damaging to the environment.

It is much more difficult to bring about social change to protect natural systems when the reasons for doing so are open to question. This is particularly the case when the scientific evidence is uncertain or incomplete. Both global warming and biodiversity illustrate the problem. In the case of global warming the mechanisms responsible and their interactions are not fully understood in terms of sources and sinks. The data are often sparse or lacking altogether (there is, for example, an almost total absence of systematic measurements of greenhouse gases in Africa and Latin America). Consequently, the modelling of the world's climatic systems depends on broad assumptions and generalisations. Based on their predictions from modelling, there is a consensus among scientists on the International Panel on Climate Change (IPCC) that the Earth's temperature is increasing at a rate of 0.3°C (range $0.2\text{--}0.5^{\circ}\text{C}$) per decade, resulting in the best estimate of a global mean temperature of around 1°C above the present value by the year 2025, and of 3°C by the end of the next century. Beyond that, the predictions become even more speculative. In terms of the distribution of the increase, it is difficult with any certainty to go much beyond saying that rises in temperature will be greatest in northern temperate latitudes. There will be shifts in climatic zones with increasing drought in some areas, more rainfall in others and a tendency towards an increased frequency of more extreme weather. Overall, there will be a rise in sea level mainly caused by thermal expansion of the oceans, but the impacts will vary according to changes in weather, altitude and relative movements of land and sea levels. Given the extreme uncertainties about the scale, distribution and nature of its effects it may seem, in the words of one observer, as if the 'current consensus on the greenhouse effect has raced ahead of the quality and quantity of scientific data on the issue' (Buttel *et al.*, 1990, p. 58).

With biodiversity we are plunged into even greater scientific uncertainty. Of the 4 million to 30 million species currently inhabiting the planet (note the scientific uncertainty already indicated here), some scientists predict that 100 species per day will be driven to extinction over the next 30 years. The current rate of extinction is estimated to be 1000 times higher than that of any other period in history. But at present only 1.4 million species have been classified by biologists (Stead and Stead, 1992, p. 35). The benefits to human beings of species are evident in food, in pollination, in

biomass, in pharmaceuticals. The potential is enormous but unknown, and the loss of species cannot be recovered except over unimaginably long time spans.

Scientific knowledge is based on theory which is contestable and evidence which is often a matter of interpretation or even of conjecture. This is especially so in such areas as global environmental change, where the evidence must be derived from trends and forecasts which themselves are often based on experiments or models. As a result, scientific evidence may be provisional and therefore revocable, a condition Yearley describes as 'pragmatic uncertainty'. As he observes about something so complex as global warming, 'we seem to become less certain the more we study it' (Yearley, 1992, p. 136). The scientific evidence on global environmental change is, at this stage, sufficiently qualified to leave room for prevarication over taking the necessary remedial action. However, this is not to say that more conclusive evidence would definitely trigger political agreement. As empirical research on international resource co-operation has sufficiently shown, scientific progress and political progress seldom go hand in hand. It seems that the impact of science alone on environmental policy making is modest unless it is combined with other more influential forces like the tide of public opinion, an increasing level of participation in environmental politics and the integration of the science/politics relationship (Andresen and Wettestad, 1992, p. 281).

The problem of the market

Scientific evidence is crucial in the identification of environmental problems. Whether it is acted upon will depend on the political environment, which is structured by the prevailing form of social organisation in the world today – the capitalist market system. In many countries, whatever their political orientation, the market is encouraged through deregulation, privatisation and the removal of barriers to trade. It should be noted that the market is actually not so free, but is subject to various forms of intervention such as subsidies, price guarantees, regulations, setting of interest rates, etc. But, in principle, the idea that a free market is suited to achieving both economic growth and environmental benefits is pervasive. Without growth, it is argued, the resources that are essential to ensure environmental security would not be created. The present period of history can even be labelled 'the triumph of the market' (Blowers, 1993, pp.789–92) (see Box 4).

At the same time a critique which argues that market capitalism is responsible for environmental degradation is beginning to influence political thinking. The major problem with the market in relation to the environment is that it is concerned with short-term economic criteria which put an emphasis on growth achieved through competition based on comparative advantage. Growth is geographically uneven. Those countries or regions unable to compete become impoverished and their environments deteriorate, while the successful areas also experience environmental degradation through the pollution, waste or resource depletion associated with overexploitation. Another problem with the market is that it fails to take account of externalities (see Chapters 1 and 6). Consequently, unwanted or unforeseen costs are imposed on third parties (individuals, communities or countries). Moreover, the market promotes the private interest over the public and ignores or discounts the interests of future generations. Finally, as Chapter 6 indicates, the market values resources in respect of their

Economic growth and the environment

The case for economic growth as a necessary condition for environmental protection was put in *This Common Inheritance*, the UK Government White Paper on Britain's environmental strategy, as follows:

'Economic growth is not an end in itself. It provides us with the means to live better and fuller lives. We should naturally avoid policies which secure growth in the short term at the expense of blighting our broader, longer term ambitions. But we should not be misled. Growth is a necessary though not a sufficient condition for achieving the higher quality of life that the world wants. In countries already beyond the dreams of a generation ago, growth is still needed to provide the resources to clean up the pollution of old industries and to produce the technology to accommodate tomorrow's industrial processes to cleaner surroundings. In countries still miserably poor, growth which will last is essential to overcoming the ruinous impact that poverty itself has on the environment. There is, therefore, no contradiction in arguing both for economic growth and for environmental good sense. The challenge is to integrate the two' (HMSO, 1990, p. 8).

use in production and does not account for the costs of depletion of non-renewable resources. For these various reasons, the market intrinsically cannot deal with the long-term conservation of the environment. Intervention becomes necessary to deal with 'market failure'. Some argue that solutions should be sought through the market. Once a proper valuation of environmental resources is secured, it will, in principle, be possible to devise means of intervention in the market that will ensure patterns of sustainable development. Opponents contend that it would be difficult to value future unknown environmental resources (e.g. forest habitats) or those whose scarcity value increases over time or to recognise the possible changes in the evaluation of resources by different societies over time. These views, of course, reflect a basic disagreement over values which influences practical approaches to policy making (see Box 5). As the problems of achieving sustainability through the market alone have become more apparent so governments have begun to examine a mixture of market and regulatory approaches. A wide range of market-based economic measures (taxes, tradeable pollution rights, recycling credits) is being designed to protect the environment. At the same time, regulatory instruments are adopted as a necessary complement to market mechanisms. The rudiments of a more interventionist approach to the environment are emerging, but there are few signs yet of any willingness to contemplate the fundamental changes in economic organisation that some critics of contemporary capitalism insist are necessary to avoid environmental catastrophe.

7.5 The process of policy making

There is, then, little to indicate that an ecologically inspired process of social change under the heading of 'sustainable development' has been set in motion. The power of environmental policies relative to other sectors of policy appears to be limited. Therefore, a major constraint on policy making is the process of policy making itself (Glasbergen, 1993; Glasbergen, 1995, pp. 6–8).

Weak and strong sustainability

Different approaches to valuing environmental resources are evident in the contrast between so-called 'weak sustainability' and 'strong sustainability'. Weak sustainability allows for the substitution between the various kinds of capital (natural capital and capital produced by human effort) and accepts a dwindling of natural resources if compensated for by extensions of production capital. Advocates of strong sustainability insist that utilisation of a natural resource should always be compensated for by reforestation elsewhere. In reality it is likely that both positions will prove relevant approaches to specific problems. It is obvious that non-renewable resources cannot be replaced, but some could be substituted. But it is equally obvious that certain resources (notably, atmosphere, water) are essential to survival and must be protected.

If we consider environmental policy's place in society, we observe a peculiar phenomenon. In scores of locations, decisions are made on production, consumption and mobility which impact negatively on the environment. These decisions are inspired by market considerations. Moreover, they are often supported by governments, since the stakes are high. The central and sectoral agencies address the 'priority' agenda of governments – growth, employment, trade, defence, energy, agriculture, industry, etc. Most societies also provide rules and regulations to mitigate or prevent deleterious impacts on the physical environment. In this case, a different sector of government comes to the fore, that of environmental policy making. This sector acts as a legitimate, institutionalised counterforce. After all, the quality of the physical environment is a priority. In its attempt to cross sectoral policy boundaries, environmental policy actually occupies a somewhat isolated position within the interplay of social forces. It is a policy which lacks the support of powerful economic interests. It is a policy with hardly any mandate.

A second factor limiting the effectiveness of environmental policy can be tracked down to the way in which the policy is being made. The conceptual ideas behind the policy merit special notice here. As we saw earlier, the awareness of environmental problems is predominantly based on scientific research. Without this research we would not be familiar with the environmental issues. Scientific research shows us the working of the material world, elucidates the conditions and processes that keep it going and identifies the causes of disruption. Whenever disruptions are observed, there is an environmental problem. Environmental policy is expected to address these problems. A balance must be restored, the scope and nature of emissions and waste disposal must be limited and the exploitation of natural resources must be reduced.

These characteristics of environmental policy show it to act essentially as a correcting mechanism for society. Moreover, it is a mechanism that often operates after the damage has come to light. In its remedial role, government predominantly acts, as it were, as an engineer, controlling the physical system on the basis of its understanding of that system. This environmental policy is typified by a view of social reality as a technical system that can be operated on the basis of centrally defined goals. It is assumed, more or less implicitly, that the policy can rank social objectives according

to their hierarchical order and that governments can translate these goals into policy instruments and ultimately achieve these objectives by means of an elaborate plan of action. At times this might be successful, notably where the social effects of environmental policy are not very dramatic. But more frequently, environmental policy gives rise to conflict, which then gets bogged down in deadlock.

Political constraints on policy making

Given the far-reaching implications of sustainable development, it is hardly surprising that there will be resistance to fundamental changes. This certainly seems to be true of the wealthier countries, which already consume a substantial share of resources. Any changes which profoundly affect people's lifestyles are difficult to defend to the public unless actions can be fully justified by the evidence. Put simply, people are hardly likely to forego the enjoyment of comfortable lifestyles, however unsustainable in the long run, if the consequences are unclear and uncertain.

Conversely, the poorer parts of the world have a stake in securing fundamental change. The inequality in resource consumption and pollution provides them with a strong moral position in the debate over global environmental change. Under existing patterns of development, the use of the environment in many parts of the developing world is already unsustainable. The claims of developing countries on the Earth's resources are increasing and these countries will be unlikely to surrender the prospect of the material benefits which they perceive the rich countries to have enjoyed with impunity. At a global level there is an impasse, with rich and poor alike perpetuating unsustainable practices – in Hardin's words, 'we are locked into a system of "fouling our own nest"' (Hardin, 1968, p. 1245).

A switch from unsustainable patterns of development is unlikely to occur without good reason. As we have seen, the evidence for some of the global environmental problems is uncertain. Moreover, the evidence is open to interpretations which can reflect different and conflicting interests. Consider the case of global warming. Added to the scientific uncertainty indicated above is the political complexity, since all countries are implicated both in terms of causes and impacts. Not surprisingly, each country will wish to limit its liability by an interpretation of the evidence which is best suited to its interests. In Chapter 3 we referred to the World Resources Institute (WRI) which compiled a composite index which combined the heat-trapping potential of the major greenhouse gases (CO₂, methane and CFCs). This placed Brazil, China and India among the top six contributors. On the other hand, the United States, though still the largest contributor, produced only 17.6% of the combined total, whereas its production of a single gas, CO₂ from fossil fuel burning, was over a fifth of the total (see Box 6).

An index such as that used by the WRI ignores the inequalities in living standards between North and South. The South has lower living standards and consequently is less able to finance greenhouse gas reduction. It is also more difficult for poorer countries to control the problem. It is technically easier to control the more concentrated emissions of CO₂ or CFCs produced in the North as against the smaller scale and widely dispersed sources of CO₂ or methane in developing countries. Finally, the fact that the greenhouse gases emitted by the North are predominantly irreplaceable fossil fuels is concealed by an index which lumps together all gases.

A further look at the WRI index

The WRI index could be criticised as a statistical approach that favoured the rich countries. For example, it overestimated the contribution of deforestation in Brazil by taking the figures for a single year, in which forest burning was exceptionally high; it underestimated the lingering impact of CFCs and the effect of past emissions of other gases produced by the developed countries; and it used data of widely varying quality (data for methane are extremely unreliable as compared to those for CO₂ emissions), which again tended to overestimate the contribution of the developing countries. The WRI index could be used to exonerate the USA and other rich countries from the major part of the blame by implicating the larger developing countries in a shared responsibility for the problem. It enables the USA to claim a reduction in greenhouse gas emissions by the year 2000, in effect masking an increase in its CO₂ output.

The above discussion of the WRI index shows us the different interests of various countries in the debate on international co-operation. The starting points of various countries for stabilising and reducing emissions are different. Andresen and Wettestad have indicated three main obstacles related to these starting points. First, the growing contribution of developing countries to the emissions at stake. Although at this moment it is mainly the industrialised countries which are responsible for the greenhouse problem, in 20–30 years' time, if present trends continue, developing countries will be responsible for more than 50% of the emissions. Most of these countries are understandably seeking rapid economic growth, for example by burning cheap coal. In order to redirect their development paths for global purposes, these countries will demand major economic and political concessions from the developed countries. Secondly, the energy economies of major international actors differ considerably, with fuel resources varying widely. China, for instance, depends heavily on coal, Japan on oil, France on nuclear power. According to Andresen and Wettestad, both the possibilities of fuel switching and the possibilities of energy efficiency measures differ for the various countries. Thirdly, the structural market positions of the major actors differ. Some countries, like the former USSR, are fossil fuel producers and sellers while many other countries, like Japan, are primarily fuel consumers and buyers. Measures to curb greenhouse gas emissions would obviously influence this international market. As a consequence of these factors the various countries will create major obstacles to a simple, uniform approach to the greenhouse problem (Andresen and Wettestad, 1992, pp. 289–90).

The problem of global warming is characterised by the asymmetrical interests and incompatible preferences of nation states. Other global environmental problems show other characteristics. Above and in Chapter 3 we touched on the relative success of ozone layer (CFCs) negotiations. Scientific evidence played an important role in securing agreement, but other factors were important too. Depletion of the ozone layer produces only losers in the short term. Unlike global warming, no nation perceives any short-term benefits from stratospheric ozone depletion. This is one of the reasons why a negotiated agreement to reduce CFCs was possible. Another reason is to be found in the fact that production and consumption of CFCs were concentrated mainly in North



Plate 7.3 Sustainable energy: wind power electricity plant in Flevoland, The Netherlands. Photo: Andy Mason/Oerlemans van Reeken studio

America and Europe. Cuts in production would not seriously disrupt international competitiveness. This is, according to Skjaereth, further underlined by two important factors. Industry was not heavily dependent on CFC production and CFCs are not critical to the modern industrial economy. Technological alternatives were available and economic uncertainty was reduced by showing that the benefits were far higher than the costs (Skjaereth, 1992). In most cases (global warming, biodiversity, deforestation, desertification, etc.) global environmental problems pose major and diverse conflicts of interest which will prove difficult to reconcile, however much deference is paid to the precautionary principle.

Economic constraints on policy making

Governments are more likely to pay attention to the immediate requirements of the economy than to longer term environmental goals. Governments depend on the support of business to provide economic growth and wealth and on the votes of workers with an interest in prosperity and jobs. Environmental regulations will, of course, be accepted, but only up to a point. Governments will ordinarily be unwilling, indeed politically unable, to jeopardise present and palpable economic advantage to avoid a future and uncertain environmental cost. They will be resistant to the closure

of a plant for environmental reasons, especially if it is likely to result in high levels of local unemployment. They will be particularly unwilling to do so if they fear that others will seize a competitive advantage. The tendency to relieve industry of the burdens of environmental regulation is especially strong in times of recession. On the basis of our discussion we would, in general, expect that the less developed countries and regions within countries would be more likely to accept or endure lower environmental standards. This is because the needs for livelihood and economic growth are seen as overriding development priorities.

We can refer again to the tragedy of the commons discussed in Chapter 6 (where the discussion focused on the issue of property rights). Putting the analogy into the context of modern economic competition, the tragedy theory assumes that companies (and nation states) act as rational free enterprisers, that they have free access to the global commons and that each stands to gain the same benefit from this access. Consequently, it is argued that companies (or nations) will continue to pollute the commons so long as they can gain individual advantage, even though they may do so beyond the regenerative capacity of ecosystems. According to the tragedy, it is only when it is recognised that resource depletion and pollution are beginning to impact on production costs and profits that companies will alter their behaviour, and by then it may be too late. The tragedy suggests that the precautionary principle is unlikely to be applied because nation states act in defence of their own economic self-interest, as the example in Box 7 demonstrates.

In reality the tragedy of the commons is not inevitable. The basic assumptions may be questioned. First, although companies and nations may act in their own self-interest, it is not always clear where their true interest lies. Indeed, there may be a multiplicity of competing, often conflicting, interests, which moreover alter over time. Economic and environmental objectives are not always in conflict. In the long term in particular, economic and environmental survival will be mutually compatible goals. Even in the short run, positive inducements for environmental controls can bring increased economic efficiency and performance. There is sufficient evidence now that stricter environmental controls can force technology and stimulate industries to innovate. There is also a growing market for technological equipment which reduces pollution and waste. Furthermore, as environmental controls become more widely applied, those companies which have introduced appropriate technology will be more competitive.

Secondly, it is not the case that everyone enjoys free access to the global commons. Access is restricted by various agreements to prevent environmental deterioration: bilateral agreements to control transboundary river pollution; international agreements to reduce ocean dumping; and global agreements to reduce ozone depletion, etc. Finally, it is not true that everyone stands to gain the same benefit from access to the global commons. As we have seen, some nations receive disproportionate benefits by using the commons as a dustbin for waste and pollution, while others suffer the negative externalities thus created. Sustainable development rests upon policies which regulate access to the commons, which give precedence to the public and global common interest over private and national interests and which reconcile conflicts of interest over economy and environment. But how can such policies be achieved?

Global warming and the tragedy of the commons

The tragedy of the commons suggests that since the atmosphere is freely accessible, nation states will have no incentive to control the emission of greenhouse gases from their territory. On the contrary, they will calculate that any controls applied unilaterally will penalise industry and the nation's competitive position, while providing only a marginal benefit that will be enjoyed by all countries. Therefore, pollution will continue unabated even though scientific evidence suggests that global warming is the likely consequence if everyone continues to behave as they do at present. Controls will only be introduced when deterioration of the environment becomes so obvious that it impacts on the economy and the quality of life. By that time, it may be too late to avert environmental catastrophe.

This poses a Catch-22 to policy makers. When you are unable to see the problem but could act to prevent it, it is politically unrealistic to do so. When you do see it and are able to act, it may be too late to do so. Thus the tragedy of the commons suggests that the precautionary principle is unlikely to be applied, because nation states act in defence of their own self-interest. On top of this, the differential impact of global warming (with some states enjoying, at least for a time, better climatic conditions or having the resources to defend themselves against the impacts of flooding, drought, etc.) will encourage varying responses to the urgency of the global situation. However, the tragedy of the commons is a special, rather than a general case, as is explained in the text.

7.6 Inequality and the principle of compensation

From the discussion of the elusive concept of sustainable development in this chapter three points can be underlined. The first is that sustainability is a scientific notion concerned with the impact of resource depletion and pollution on the Earth's ability to maintain and regenerate its capacity for supporting life. Since the limits to this capacity are matters of scientific debate it is argued that a precautionary approach to management of the Earth's environmental systems should be taken. The second point is that development is a social construction involving different conceptions of living standards and lifestyles which relate, in part, to values. Taken together sustainability and development become a goal, a strategy even, whereby human behaviour and organisation across the globe are compatible with conserving environmental resources and preventing pollution. But, and this is the third point, the contemporary pattern of social development reveals vast inequalities which must be reduced if sustainable development is to be politically achievable.

If international policies are to be agreed upon and successfully implemented, they will need to be founded on principles of equity and compensation for those communities, countries and future generations who experience the environmental costs of economic development. This necessity was recognised in the third principle of the Rio Declaration: 'The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations'.

There are three general circumstances in which the principle of compensation could be exercised to ensure environmental protection.

First, where the right to develop is denied or access to environmental assets is limited or prevented. In such cases compensation may be justified for the loss of property rights which creates hardship, but not in cases where compensation would provide a windfall gain. This issue has been controversial in several Western European countries, where compensation has been paid to farmers for not destroying protected features, regardless of the individual circumstances or whether they had any intention to develop. This principle could be applied on a global scale. International agreements to protect rainforests and other global environmental assets deprive communities and countries of the economic benefits of development. Therefore, compensation in the form of aid, debt-for-Nature swaps, technology transfer or direct financial payment would be justified. Conversely, if it is justifiable to withhold certain global assets from exploitation then it is also justifiable to provide greater access to those areas that are exploited. In this sense, environmental resources can be seen as common property rights, not as the exclusive property rights of individuals, companies or countries.

Second, it may also be necessary to compensate those communities or countries that experience the negative externalities of pollution. This applies to communities where polluting activities are concentrated, sometimes called 'pollution havens'. It also applies to countries which are in the path of transboundary pollution. For example, the ageing nuclear reactors in Eastern Europe are recognised as posing substantial risks, and Chernobyl has already demonstrated the potential scale of disaster. But these countries are often heavily dependent on nuclear output for their power supplies and are unable to upgrade, replace or shut down reactors without considerable aid.

Third, under conditions of sustainability there is the obligation of the present generation to the future. This obligation is very difficult to express precisely. Brundtland emphasises not compromising future development by depriving it of natural assets. Other definitions stress the importance of ensuring an environmental legacy that is at least as good as that of today. None of these ideas is very precise. There seem to be two requirements. One is that we should try to avoid imposing environmental risks on future generations. The other is that we should ensure that resources are replenished where possible and conserved where they are irreplaceable. Both sets of requirements have been breached and are, strictly speaking, impossible to meet. Where some deprivation is unavoidable there should be compensation in the form of research and technology designed to mitigate the problems or financial resources sufficient for future generations to manage the problem. In the case of nuclear waste, for example, compensation implies both research into the most appropriate ways of managing waste and finance to support solutions.

7.7 Conclusion: the changing role of the nation state

As the global commons become grossly polluted and as resources are depleted, everyone, developed and developing countries alike, becomes engulfed in gradual environmental degradation. Of course, some regions may initially benefit from a

changing climate, while others may have sufficient resources to protect themselves, at least for a while. But, ultimately, none can escape. As global deterioration becomes inescapable, so self-interest is expressed in a common interest in survival. Political response then becomes inevitable.

At present, the political responses which will take place are hard to predict. Unless there is a sudden environmental catastrophe such as would result from a nuclear war, the onset of change is likely to be gradual. It is also possible, as resources become more scarce or climate worsens in some areas, that there will be increasing conflict. Among the likely consequences will be large-scale migration of people as desertification spreads, conflicts over water between countries which share major river basins, and regional wars over diminishing resources. Such conflicts will be likely if contemporary patterns of inequality persist, with the rich countries seeking to maintain their advantage and the poor seeking to secure survival.

Alternatively, precautionary action may be taken through international agreements to prevent environmental deterioration. Such statements – some of which have been signed – would have to be translated into practical and implemented policies. For example, agreements to reduce greenhouse gases which are now tentatively foreshadowed will have to be forged into policies stating targets, time-scales, methods and monitoring which are binding upon nation states. The fundamental changes in development necessary to achieve sustainability thus challenge the prevailing political system based on the nation state, an issue already raised in Chapter 4.

A major political challenge is that of ‘political leadership’. Leadership ‘provides the initiating stimulus and the pressure for reaching agreement in a context where inertia and conflicts of interests would otherwise be likely to prevail’ (Liberatore, 1993, pp. 14–15). In the environmental field, there are only a few cases where leadership was directly provided by an international organisation backed by major powers. As Liberatore observes, leadership is usually provided by one country or a group of countries. In cases such as the international regulation of CFCs or marine pollution, the USA leadership has played a crucial role in promoting and reaching agreement, by providing funds and facilities to international organisations and especially by taking or threatening unilateral action. The USA prodded the reluctant countries into action. At other times, the USA has not been an environmental leader but rather a laggard, as, for example, on the question of biodiversity at the Rio summit. The European Union has occupied a position of leadership especially in the field of the climate change negotiations.

Until now, nation states have been the ubiquitous and most powerful form of political organisation. In principle, they possess sovereign authority over their territory and they have the administrative capacity and coercive power to enforce policies. Sovereignty confers on states the power to permit and regulate the exploitation of resources within their jurisdictions, free from outside interference. In the UK, for example, the peat moors of Scotland’s Flow Country can be harvested and afforested. Energy and mineral resources can be exploited, motorways constructed or high-intensity agriculture developed, causing considerable environmental destruction. Within the nation state such developments may be controversial and, as environmental concern has grown, so environmental regulations and controls have been tightened.

As Chapter 4 has shown, national sovereignty in the absolute sense of supreme authority over a defined territory has always been more or less compromised in

practice by transnational economic and social processes. In the contemporary world, the transnational corporations (TNCs) wield enormous power over the exploitation of resources. Their investment, production and markets are widespread and mobile. Their control over resources and markets enables them to exert considerable power in many states. And even in the developed countries, TNCs are able to exert influence on a range of policies including environmental regulation. Their size and economic significance place them substantially outside the control of individual states or international organisations.

State power is also diminished to the extent that international organisations are able to develop and implement binding policies. International environmental action implies some surrender of state sovereignty and a transfer of power to various transnational political agencies and organisations. These include, among others, intergovernmental organisations (IGOs) ranging from those set up to administer, monitor and enforce global environmental agreements to agencies which have an economic remit but which affect the environment, such as the General Agreement on Tariffs and Trade (GATT), the Food and Agricultural Organisation (FAO) or the International Atomic Energy Agency (IAEA). These also include those agencies set up to fund and administer a range of development projects, such as the World Bank.

As well as surrendering power upwards to the supranational level, sustainability also requires an emphasis on the subnational level. It is at this level – regional and local – that commitment to policies must be generated and detailed implementation made effective. Thus the Treaty of Maastricht emphasised subsidiarity as a process ‘in which decisions are taken as closely as possible to the citizen’, meaning taking decisions at the lowest level compatible with attaining required objectives. International environmental policy making is therefore not simply a process of forging agreement between countries, it is also about achieving interrelationships between various levels of policy making, from local right through to global.

Sustainable development indicates a need for structural changes in the political system, notably a transfer of power from the nation state both upwards and downwards, an increasing responsiveness to environmental criteria in policy making and a willingness to curb the power of short-term economic interests. Our discussion has been more or less abstract and speculative, but it has demonstrated that only the first steps in this direction have been taken.