2 Role of government in ESD implementation

Achievement of ESD is a broad policy goal which aims to balance economic, environmental and social considerations in decision making in the long term interest of society as a whole. It incorporates key elements of 'good practice' policy making such as analysis of the feasible alternatives for addressing particular policy issues or problems, identifying parties likely to be affected by particular policy decisions, and assessing the costs and benefits of decisions (including nonpecuniary costs and benefits such as environmental amenity and health and safety outcomes).

ESD policy making is more complex than many other areas. It frequently requires consideration of factors that are not easily measured (for example, costs and benefits far off in the future) and quantifying environmental and social costs and benefits can be difficult in some instances. Achievement of ESD requires a framework for explicit consideration of these issues. Such a framework does not, however, suggest the relative priorities or weights that should be given to economic, environmental and social considerations. These remain, and should remain, political judgements and not technical or analytical issues.

The main purpose of this chapter is to discuss the role played by governments in implementing ESD, and the reasons why government intervention can sometimes fail to meet its objectives, along with some suggestions for overcoming intervention failures. The chapter begins by spelling out a number of issues relevant to the implementation of ESD, including equity considerations and the conservation of biological diversity.

2.1 Issues in implementing ESD

The National Strategy for Ecologically Sustainable Development (NSESD) makes explicit the consideration of two important but difficult to measure objectives — inter- and intra-generational equity and conservation of biodiversity.

Inter- and intra-generational equity

The underlying objective of the NSESD is maintenance or improvement of welfare both within, and between, generations (see chapter 1). The concept of inter-generational equity requires that actions of the present generation should not compromise the ability of future generations to enjoy at least the same living standards and quality of life as the current generation. The principle of inter-generational equity is described in the Intergovernmental Agreement on the Environment (COAG 1992, p. 14) as follows:

> ... the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

Young (1993, p. 17) suggests inter-generational equity 'requires the present generation to live within and only off its income … It also requires us to provide future people with an endowment equivalent to that we received'.

However, this raises issues about tradeoffs between inter-generational and intra-generational equity, and the appropriate weights to be given to the needs of today's poor relative to the needs of future generations. Environment Australia (sub. 21, p. 5) suggests:

> These two objectives may conflict to the extent that economic growth which increases the scope for equity now, may reduce equity between generations, either through irreversible environmental or heritage impacts, or by impacts which can only be reversed at a high cost. There is considerable uncertainty about the direct impact of current economic activity on the future environment, and the feedback loops between economic growth, investment, poverty alleviation and pressure on the environment. There is also considerable debate about the value of environment and heritage assets.

While it may appear conceptually simple, defining inter- and intra-generational equity in practice is more difficult and raises a number of complex issues. These issues include substitutability between natural, human and man-made capital and the choice of an appropriate discount rate.

The concept of stock of capital is central to the idea of maintaining or improving welfare. The stock of capital inherited by a generation from the previous generation includes human capital (knowledge and understanding), man-made capital (economic and social infrastructure) and natural capital (biodiversity, renewable and nonrenewable resources, ecological integrity). ESD principles require that the total stock of assets passed onto future generations should be at least as great as that inherited, but the best mix of capital assets is undefined. Thus, a key issue for ESD is the degree of substitutability between these types of capital. There are differing views on the extent to which substitution is possible. For example, Hill (1997, quoted in IC 1998, p. 59) suggests:

> ... 'sustainable development is a situation where a country's per capita aggregate capital stock is non decreasing over time'. Aggregate capital stock is a function of natural, manufactured and human capital.

This approach assumes that substitution between human, man-made and natural capital is possible and that a decline in natural capital is acceptable providing this decline is balanced by an increase in human and man-made capital. For example, a society might decide to pass on to the next generation less oil or coal, but more schools or hospitals.

A less optimistic view is that there are limits to the extent that substitution of natural capital for human and man-made capital is possible without compromising the welfare of future generations. Pearce et al. (1989) argue that this is because:

- environmental damage can be irreversible, affecting all future generations;
- not all amenities and services provided by the natural environment can be substituted with human or man-made capital;
- uncertainty in our understanding of natural systems and future technological developments in substitutability suggests a risk averse approach to the use of natural capital is needed; and
- environmental degradation can lead to price differentials between polluted and non-polluted areas. This can disadvantage those on lower incomes, who are less able to respond to these price changes or choose an area with less pollution, and who might therefore bear a disproportionate share of the burden of environmental degradation.

Some natural resources which maintain essential life support services, such as the atmosphere and nutrient cycling processes, are non-substitutable. Other natural resources, such as coal and iron ore, may be much more substitutable, especially with increasing technological change.

Another issue in implementing ESD is the choice of an appropriate social discount rate. The discount rate is used to allow comparison of the benefits and costs of a proposal incurred at different times. Discounting recognises that, usually, costs and benefits incurred in the short term (by the current generation) are valued more highly than costs and benefits incurred much later (by future generations). Therefore, it has been argued that low discount rates should be used for projects with a significant environmental component to prevent unfair discrimination against future generations (Goodin 1986, quoted in IC 1996, p. C3). However, how the use of low discount rates will affect the use of natural resources or environment protection is ambiguous (Markandya and Pearce 1991). For example, application of a low discount rate to a dam, which has a high capital cost and low annual benefits

accruing over many years, can inflate the future benefits relative to the costs and result in a decision to construct the dam rather than conserve the original habitat (IC 1996).

Most economists reject the idea of using a special (low) discount rate for projects with major environmental impacts. Markandya and Pearce (1991) argue that environmental concerns might be better tackled by developing the concept of sustainability as a specific policy issue which recognises the constraints imposed by the need for sustainability, rather than attempting to adjust the discount rate. For example, one way to meet the condition of sustainability is to require that any environmental damage be balanced by projects designed specifically to improve the environment.

As mentioned previously, pervasive uncertainty surrounds most issues related to natural capital which suggests that a risk averse approach to its use should be adopted. The precautionary principle, adopted under the Intergovernmental Agreement on the Environment, provides such an approach. It (COAG 1992, p. 13) suggests:

> Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

It goes on to state:

> In the application of the precautionary principle, public and private decisions should be guided by:
>
> (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
>
> (ii) an assessment of the risk-weighted consequences of various options. (COAG 1992, p. 14)

While the full implications of the precautionary principle are open to debate, it does not mean that all developments with uncertain impacts on the environment should not proceed. Rather, all options should be explored when considering a development with uncertain future consequences (Young 1993).

Some participants discussed the potential impact of population growth on the achievement of ESD objectives. The Department of Immigration and Multicultural Affairs (sub. 39, p. 5) noted that this might be a factor but added:

> It should be noted, however, that achievement of ESD will depend on many other pivotal considerations such as, population distribution and mobility, consumption patterns, productivity, technology, public sector pricing policies, waste management and disposal, lifestyle choices and land management practices.

Conservation of biological diversity

The NSESD explicitly accounts for biological diversity, which is a component of natural capital. The related National Strategy for the Conservation of Australia's Biological Diversity defines biological diversity (or biodiversity) as:

> … the variety of all life forms — the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they form a part. (CoA 1996, p. 1)

Three widely recognised levels of biodiversity exist. Ecosystem diversity refers to the diversity of entire ecosystems such as coral reefs or rainforests. Species diversity refers to the variety of different species which live within an ecosystem. Genetic diversity refers to genetic differences within a species (Young et al. 1996). Biodiversity also has a spatial dimension — some ecosystems or species are found in many areas while others are found in limited areas.

There is considerable debate and uncertainty about why, how, and the extent to which, biodiversity should be conserved. The State of the Environment Advisory Council (SEAC 1996) outlines four reasons for conserving biodiversity:

- ecosystem processes — biodiversity underpins the processes which support life, such as maintenance and regulation of water resources, soil formation, recycling of nutrients, atmospheric quality and climate;
- ethics — the belief that no species (and no generation) has the right to sequester the earth's resources solely for its own benefit;
- aesthetics and culture — biodiversity may contribute to cultural values, and its aesthetic and recreational values are highly valued by an increasing number of Australians; and
- economic — plants, animals and ecosystems are potential sources of food and medicines, are tourist attractions, and provide resources for industry, agriculture and forestry.

In some cases, damage caused by the current generation to the stock of human, man-made or natural capital may ultimately be reversible (at a cost to future generations). In other cases, however, losses of biodiversity and damage to the natural environment caused by the current generation can be irreversible and could have significant consequences for future generations.

2.2 Role of government in implementing ESD

The effective implementation of ESD requires participation by governments, business, industry and the community. Governments may be involved in the

implementation of ESD as a participant, that is, by taking account of ESD considerations in relevant government activities. The complexities involved in implementing ESD discussed above suggest there is also a role for government to address 'market failures' in the implementation of ESD.

Market failures occur when markets fail to account for the full benefits or costs to society of an activity, and therefore fail to send the correct price signals to decision makers. The failure of markets to get prices right can result in inefficient use of resources, lower economic growth than would otherwise be the case, and adverse environmental and social impacts (OECD 1992a).

In the case of ESD, market failures can occur as a result of:

- the presence of externalities;
- inadequate information (for example, about the needs of future generations, the degree of substitutability of natural capital, and why, how, and how much biodiversity should be conserved);
- the public good characteristics of some components of natural capital; and
- the existence of 'open access' resources.

The existence of market failures is one of the main reasons for government intervention (although not a sufficient condition because the costs involved in intervention may outweigh the benefits in some instances). The most appropriate form of government intervention depends on the underlying cause of the market failure.

Governments can address market failures using a number of approaches, including:

- encouraging the internalisation of externalities using existing markets and price signals by, for example, using environmental taxes and user fees, and removing subsidies on natural resource use;
- creating markets by establishing property rights (for example, property rights for land and water resources, and tradeable pollution permits);
- using legislation to regulate specific activities and to support market based approaches; and
- providing information in relation to ESD concerns or problems, including public education, funding R&D and developing performance indicators for monitoring, evaluating and reporting on the implementation of ESD.

The role of government in implementing ESD also includes:

- setting the strategic and policy framework for ESD implementation;

- taking ESD principles and objectives into consideration in relevant policy formulation, decision making processes and programs;
- coordinating ESD policy development and implementation between levels of government and between government departments and agencies; and
- developing partnerships between government, business and community groups to enhance ESD implementation.

2.3 Intervention failure

Although government has a role in ESD implementation, intervention sometimes fails to meet its objectives for a variety of reasons. This results in an inappropriate balance between economic, environmental and social objectives in policy and program formulation. Characteristics of ESD which increase the likelihood of intervention failure include the absence of an adequate information base, the long term nature of ESD issues, changing priorities over time, uncertainty, and the involvement of different levels of government and different divisions within governments. These can lead to regulatory capture, inadequate analytical tools, policy inertia or poor coordination by governments.

Regulatory capture

Government intervention is decided in the political process where groups, or different stakeholders, typically attempt to influence decisions in their favour. Regulatory capture occurs when the policy making process is 'captured' or heavily influenced by groups affected by the regulation.

Regulatory capture can have two effects:

- policies aimed at a particular market failure can result in adverse economic, environmental or social consequences; and
- interventions intended to have positive economic, environmental or social benefits can be influenced so that initial goals are altered.

Inadequate analytical tools

Environmental and social impacts are often not valued by markets. Current analytical tools for measuring nonpecuniary environmental impacts and certain social impacts are limited. Therefore, even when governments aim to incorporate environmental and social considerations in decision making, it can still be very

difficult to do so in practical terms. Furthermore, standard economic techniques tend to be biased against schemes with global environmental implications (such as those to reduce greenhouse gas emissions) as the analysis tends to be undertaken at the national level and ignores impacts affecting other countries. The process of discounting can also give lower weight to future environmental benefits and costs of alternative strategies and policy options (OECD 1992b).

Policy inertia

Intervention failures frequently stem from inertias in the policy making process. As community attitudes, available information and technologies change, the scale and form of government intervention may need to change. If these changes are not made, an appropriate government intervention in one period can become an intervention failure in a later period (OECD 1992b). An example is Commonwealth tax concessions for land clearing which were introduced to encourage agricultural development. However, these policies resulted in overclearing and subsequently contributed to degradation of natural resources (IC 1998).

Poor coordination by governments

The various levels of government, and divisions of responsibility within governments, can also create conflict in policy formulation. Even if environment protection is an agreed objective, it is quite possible for problems to arise if there is inadequate coordination of policies across levels of government or across government departments and agencies (OECD 1992b). A mismatch between the nature of environmental problems and the sectoral problem solving structure of governments can exacerbate this, as can a lack of rewards, or incentives, in bureaucracies for intersectoral approaches.

Failures of policy coordination are often due to the compartmentalisation of natural and social science disciplines. This can sometimes result in inadequate definition of ESD problems based on single discipline perceptions and solutions. A higher level of analysis is also needed to integrate scientific knowledge with the many sources of social, cultural and economic knowledge that are relevant to complex ESD issues. This can be compounded by the compartmentalisation of government into departments and agencies pursuing different, and often competing, objectives. The result can, in some instances, be failure of horizontal coordination (coordination between different departments and agencies within a given level of government) (Carley and Christie 1992).

Poor vertical coordination is the result of failure of understanding and information flows between levels of government, and between government and other stakeholders, such as resource users. In Australia, natural resource management and environment protection responsibilities are shared between the States and the Commonwealth. This can, in some instances, contribute to vertical coordination failure. Often incentives and constraints under which resource users operate are poorly understood by policy makers, and this can result in policies which appear reasonable but are difficult to implement.

Intervention failures can also take the form of inefficient policies aimed at addressing a particular problem or issue (including instances where there is no need for government intervention). Furthermore, varying definitions held by decision makers of what ESD is, inadequate knowledge of how to implement ESD, and what constitutes an appropriate balance between economic, environmental and social considerations, can also contribute to intervention failure.

2.4 Addressing intervention failures

As discussed in the previous section, intervention failure is associated with inadequate knowledge in many cases. Adequate information on which to base decisions and for monitoring, evaluation and reporting of ESD outcomes is essential for achieving effective and efficient government intervention in ESD related issues. To build an adequate information base, government may have a role in coordinating existing sources of information (or at least not impeding the flow of information and the linkages between relevant databases) and in developing, and implementing, a strategic approach to fill information gaps and minimise duplication of effort in data collection. Adequate long term funding of data collection (including research and development) is also necessary. Training and education programs to provide government officials with a better understanding of the underlying principles of ESD and how to achieve an appropriate balance between economic, environmental and social objectives may also be required, and may help reduce the occurrence of regulatory capture. Further development of appropriate analytical tools may also be useful.

To overcome policy inertia, measures are required to ensure that policies being developed to address ESD issues are efficient, and that policies directed at other issues take into account their impact on ESD. Mechanisms to review government interventions periodically to ensure that intervention is still required and is efficient are also needed.

Box 2.1 **Commonwealth Government measures used to minimise tension between departments**

The Commonwealth Government has used a number of measures to minimise the wasteful aspects of duplication and tension between departments, including:

- structuring departments to minimise overlapping responsibilities;
- carefully coordinating issues which need to be coordinated, but providing the maximum possible devolved responsibility (within clear objectives and accountability frameworks) for issues which do not;
- relying as much as possible on general rather than industry specific regulation;
- reviewing programs to minimise the areas of duplication or overlap; and
- promoting a whole of government ethic, at all levels, in the Commonwealth public service, but particularly at senior levels.

Source: Beale (1995).

A whole of government approach is needed to overcome intervention failures in implementing ESD due to poor government coordination. To overcome horizontal coordination failure, it is important to properly define the boundaries of responsibility between departments to reduce duplication and tensions. Tensions between departments with overlapping responsibilities, or with roles that bear on the same issues from different perspectives, can be minimised through a number of measures (box 2.1). Disputes between closely related areas may still occur but they are less likely to occur when they are intradepartmental than when they are interdepartmental (Beale 1995).

Overcoming vertical coordination failure requires improving mechanisms for coordination between levels of government and between government departments and agencies. Such mechanisms include interdepartmental committees, ministerial councils and intergovernmental agreements. Other measures, which may improve coordination between government and other ESD stakeholders, include working groups made up of community, industry and non-government organisations where appropriate.

Successful coordination requires introducing incentives for departments and agencies to coordinate their activities. One possibility is making departments and agencies more accountable for ESD outcomes through output based management (OBM) or other measures. OBM refers to a process of funding departments and agencies based on the outputs produced, rather than on the basis of their inputs. The primary purpose of OBM is to strengthen the clarity and accountability of both the government and its departments and agencies in providing goods and services to the community.

Some of the ways of addressing intervention failures discussed above are further expanded in subsequent chapters (for example, chapters 6 and 7), particularly within the context of better integrating economic, environmental and social considerations into policy and improving coordination among key stakeholders. Means to improve the information base, performance indicators, and the monitoring and evaluation of ESD policies and programs are also discussed.