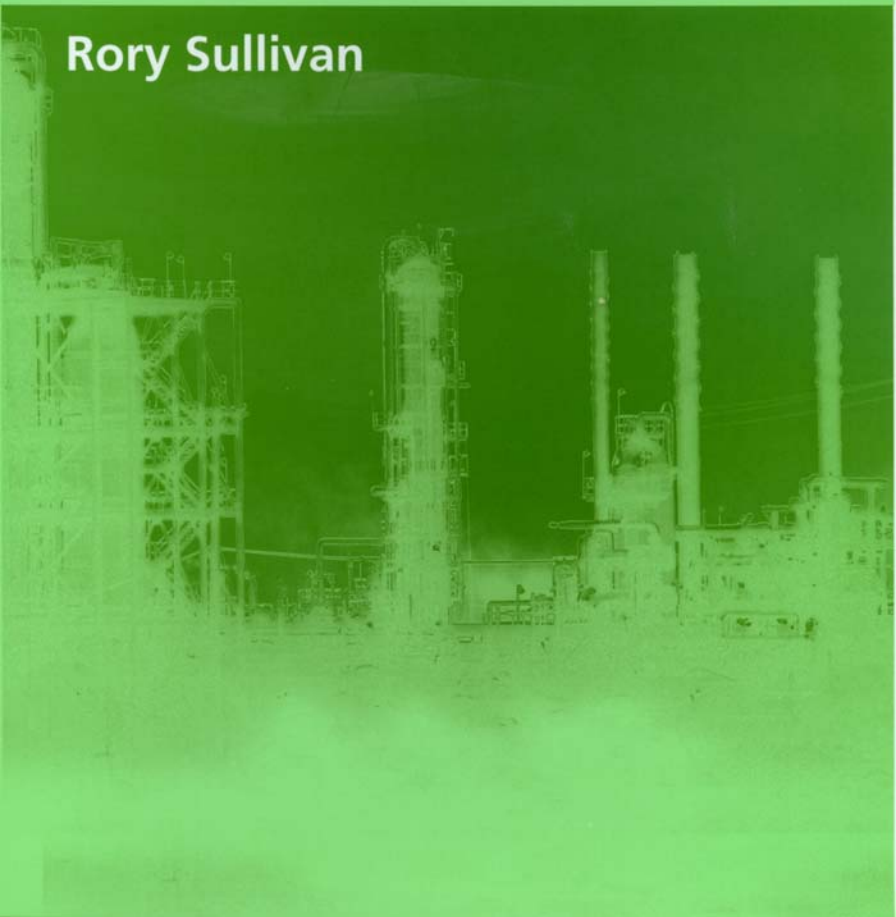




# Rethinking Voluntary Approaches in Environmental Policy

**Rory Sullivan**



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# Contents

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<i>List of Tables</i>	vi
<i>Acknowledgements</i>	vii
<i>List of Abbreviations</i>	viii
PART I INTRODUCTION	
1 Introduction	3
2 Evaluating environmental policy instruments	6
PART II LITERATURE REVIEW	
3 Environmental policy instruments	33
PART III VOLUNTARY APPROACHES IN AUSTRALIA	
4 The Australian environmental policy context	63
5 Environmental management systems	69
6 The Australian Greenhouse Challenge	97
7 The Australian Minerals Industry Code for Environmental Management	132
PART IV SYNTHESIS AND ANALYSIS	
8 Discussion	167
<i>Bibliography</i>	187
<i>Index</i>	211

## Tables

---

2.1	Environmental policy evaluation criteria	7
2.2	Environmental policy evaluation criteria – common features	10
2.3	Criteria for the evaluation of voluntary approaches	13
6.1	Australian greenhouse gas emissions (1990–2002)	103
6.2	The impact of voluntary approaches on greenhouse gas emissions	127
7.1	ICMM Sustainable Development Framework: key principles	135
7.2	Principles of the Australian Minerals Industry Code for Environmental Management	137
7.3	Examples of incidents and accidents involving Code signatories (1996–2002)	146
7.4	Examples of incidents and accidents involving non-signatories to the Code (1996–2002)	147
7.5	NGO-defined environmental performance measures for the mining industry	149
8.1	Comparison of code elements	182

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Rory Sullivan  
London, UK  
October 2004



# Abbreviations

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ABARE	Australian Bureau of Agricultural and Resource Economics
ACF	Australian Conservation Foundation
AGO	Australian Greenhouse Office
BCA	Business Council of Australia
BIAC	Business and Industry Advisory Committee
CDM	Clean Development Mechanism (Kyoto Protocol)
CEO	Chief executive officer
CFCs	Chlorofluorocarbons
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon dioxide
COP	Conference of the Parties (under the UNFCCC)
CRL	Consolidated Rutile Limited (Australia)
DEST	Department of Environment, Sport and Territories (Australia)
EEA	European Environmental Agency
EMAS	Eco-Management and Auditing Scheme (European Union)
EMS	Environmental management system
ESB	Energy Smart Business (programme)
GDP	Gross domestic product
GWP	Global Warming Potential
ICEM	International Federation of Chemical, Energy, Mine and General Workers' Unions
ICMM	International Council on Mining and Minerals
IEA	International Energy Agency
IGAE	Intergovernmental Agreement on the Environment
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organization
JAS-ANZ	Joint Accreditation System for Australia and New Zealand
JI	Joint Implementation (Kyoto Protocol)
LNG	Liquefied natural gas
MCA	Minerals Council of Australia
MMSD	Mining Minerals and Sustainable Development
MPC	Mineral Policy Centre (USA)
MPI	Minerals Policy Institute (Australia)
MT CO <sub>2</sub> (eq)	Million tonnes of carbon dioxide equivalent
N <sub>2</sub> O	Nitrous oxide

NGO	Non-governmental organization
NSW	New South Wales
NSWEPA	New South Wales Environment Protection Authority
OECD	Organization for Economic Co-operation and Development
PACIA	Plastics and Chemicals Industry Association (Australia)
PFCs	Perfluorocarbons
PR	Public relations
SEDA	Sustainable Energy Development Authority (Australia)
SF <sub>6</sub>	Sulphur hexafluoride
SMEs	Small and medium-sized enterprises
TRI	Toxics Release Inventory
UK	United Kingdom
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
WHO	World Health Organization
WWF	Previously known as the World Wildlife Fund but, since 2002, prefers to be known as WWF, the global conservation organization



## PART I

### Introduction



# 1. Introduction

---

Since the late 1960s, there has been a dramatic increase in public concern regarding the quality of the environment. One of the most visible consequences has been that, in most countries, industry is now subject to a complex web of legislation, standards and rules. These ‘command and control’ instruments have been criticized on the grounds that they are inefficient and inflexible and impose unnecessarily high costs, expensive monitoring and record-keeping requirements on industry. Companies and, to a lesser extent, governments have strongly promoted voluntary approaches as preferred alternatives to command and control regulation, citing benefits such as better relationships with public authorities and other stakeholders, optimized regulatory requirements, increased business flexibility, and the meeting of environmental goals more cost-effectively and more quickly than traditional command and control approaches. However, the support for voluntary approaches is not universal, with critics highlighting consequences such as reduced government control over the environmental dimensions of business, reduced accountability for business, the weakening of legal frameworks and the risk of reductions in environmental quality. As noted by Gunningham and Rees (1997: 370), voluntary approaches may simply be a ‘façade to give the appearance of regulation and thereby ward off government intervention, to serve private interests at the expense of the public’. Other criticisms of voluntary approaches have included the tendency for voluntary approaches to have self-serving rules and to lack many of the virtues of conventional regulation in terms of visibility, credibility, accountability and compulsory application.

These polarized views have done little to address the more fundamental questions about whether voluntary approaches have a role to play in modern environmental policy and, if so, under what conditions. While there has been a significant body of experience with voluntary approaches, little has been written about their effectiveness or their optimal design for efficiency and effectiveness. Through the detailed analysis of three case studies (discussed further below), this book evaluates the potential for voluntary approaches to contribute to public environmental policy. The book also examines some of the controversial issues around voluntary approaches, such as their environmental effectiveness, their relative efficiency and their impacts on the regulatory space.

## **What are Voluntary Approaches?**

Voluntary approaches can be defined as schemes where organizations agree to improve their environmental performance beyond legal requirements (OECD, 1999: 21, 46); although the term ‘voluntary’ may not be strictly accurate as voluntary approaches are often implemented in response to consumer and community pressures, industry peer pressure, competitive pressures or the threat of new regulations or taxes. That is, voluntary approaches may better be described as ‘encouraged’ or ‘quasi-mandatory’, where such programmes operate within and rely on elements of the existing legal system (Gunningham and Rees, 1997: 398; Khanna and Damon, 1999: 2). Of particular importance here is that there is no strict dichotomy between voluntary approaches on the one hand and government regulation on the other. It is generally the case that even the strictest forms of government regulation will include some voluntary elements, while voluntary approaches are frequently implemented with either some form of government sanction or some threat of regulation.

Voluntary approaches can be divided into four categories: (i) unilateral commitments, (ii) private agreements made by direct bargaining between polluters and those affected by pollution, (iii) agreements negotiated between industry and public authorities and (iv) voluntary programmes developed by public authorities (OECD, 1999: 16–18; Gaines and Kimber, 2001: 162). Unilateral commitments (also widely referred to as self-regulation) involve organizations defining their own environmental objectives and then communicating this information to stakeholders. Unilateral commitments, which can be either individual or collective, include company codes of conduct, systems of environmental management, corporate environmental reporting, environmental accounting and environmental auditing. Private agreements are contracts or other forms of agreement between polluting firms and those affected by (for example, workers, local community, other firms), or with an interest in (for example, community organizations, environmental groups, trade unions, business associations), the emissions from the facility. Private agreements may cover issues such as the actions to be taken to minimize or control emissions or the payment of compensation, and are generally underpinned by contract law. Negotiated agreements are contracts between public authorities and industry and generally include targets and a timeframe within which the target is to be met. These are often underpinned by a threat of regulatory action if the conditions of the negotiated agreement are not met. Finally, public voluntary programmes (for example, challenge programmes, ecolabelling, award or prize programmes, research and development or innovation programmes) involve organizations agreeing to meet standards developed by public bodies.

## **The Case Studies Considered in this Book**

This book examines voluntary approaches through the lens of three case studies: environmental management systems (EMSs; in particular, the adoption of ISO14001 in Australia), the Australian Greenhouse Challenge, and the Australian Minerals Industry's Code for Environmental Management. Two of the case studies (ISO14001 and the mining industry code) can be categorized as unilateral commitments while the third (the Greenhouse Challenge) is a public voluntary programme.

There are a number of reasons for selecting these case studies. The first is that all three programmes were launched in 1995 or 1996 and, because all three relate to Australian industry, they have been developed and implemented against the same backdrop of regulation and public policy on the environment. To ensure consistency of analysis, all three have been analysed for the period 1995–2002. The second reason is that there is considerable overlap between the three case studies. For example, many of the companies that have signed the Australian Minerals Industry's Code for Environmental Management are also members of the Australian Greenhouse Challenge and/or have developed and implemented EMSs. These overlaps enable questions such as whether multiple voluntary approaches can be applied to the same environmental problem and the sequence in which voluntary approaches should be introduced into the policy space to be examined. The third reason is that all three programmes have been proposed as international best practice models for voluntary approaches. For example, the Australian Minerals Industry's Code has been proposed as a potential model for the international mining industry. While the manner in which the different voluntary approaches have been designed and implemented reflects the Australian political, economic, institutional and environmental context, it is possible to draw conclusions on the potential for these models to be applied in other countries and in other areas of environmental policy.

## **The Structure of the Book**

This book is divided into four sections, namely this introduction and a description of the analytical framework used for the evaluation of the three voluntary approaches (Chapter 2), a review of the literature on voluntary approaches (Chapter 3), a discussion of the Australian policy context followed by the three case studies (Chapters 4–7) and the discussion and analysis (Chapter 8).



## 2. Evaluating environmental policy instruments

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One of the particular limitations with the literature on environmental policy instruments is that so much of the writing is very discipline-specific. While it may be overly harsh to stereotype economists as favouring economic instruments, lawyers as preferring traditional regulatory approaches, scientists as preferring research, and business people as preferring voluntary approaches or self-regulation (as suggested by Gunningham and Sinclair, 1999a: 50), such an assessment is probably not too far from the truth. The consequence of reducing the evaluation of environmental policy instruments to a single criterion is that potentially important dimensions may be omitted or excluded from consideration. For example, the fact that a specific policy instrument is the most economically efficient does not mean that the instrument will be acceptable to business (for example, business may be unwilling to incur the transaction costs associated with the implementation of the new instrument). This book deliberately presents an interdisciplinary view on policy instruments, where a range of factors, such as environmental effectiveness, economic efficiency, innovation and political acceptability are considered. This broader approach allows the broader dimensions and implications of policy instruments to be identified and assessed. One of the challenges with an interdisciplinary approach is that there is limited agreement in the literature on the criteria that should be used for policy instrument evaluation. Table 2.1 illustrates the issue well with, at least on the surface, significant differences in the criteria proposed by different authors: even the Organization for Economic Co-operation and Development (OECD) proposes different criteria for evaluating economic instruments (OECD, 1997) and voluntary approaches (OECD, 1999), while the articles by Hundloe (1997), Stanford (1997), James (1997) and Young (1997) were presented at the same workshop (hosted by Environment Australia).

While Table 2.1 seems to offer limited guidance on the criteria that should be used, a restructuring (see Table 2.2) indicates that there is some degree of agreement on the criteria that should be used, and 11 distinct criteria for the analysis of environmental policy instruments can be identified: environmental effectiveness, economic efficiency, transaction costs, competitiveness, soft effects, innovation, acceptability, equity, revenue-raising, implementation feasibility, and inclusiveness and public participation.

Table 2.1 *Environmental policy evaluation criteria*

OECD (1999)	OECD (1997)	Hundloe (1997)	Stanford (1997)	James (1997)
Environmental effectiveness	Environmental effectiveness	Technical feasibility	Dependability	Efficiency in management
Economic efficiency	Economic efficiency	Economic efficiency	Economic efficiency	Efficiency in protecting the environment
Administration and compliance costs	Administration and compliance costs	Innovation	Information requirements	Effectiveness in protecting the environment
Competitiveness	Soft effects	Flexibility	Ease of monitoring and enforcement	Incentives for improved efficiency and environmental performance
Soft effects	Dynamic effects and innovation	Management costs <sup>b</sup>	Flexibility	Equity
Dynamic effects and innovation	Revenues	Distributional effects	Equity	Ongoing incentives
Viability and feasibility	Wider economic effects <sup>a</sup>	Acceptability		Equity
				Compatibility with existing institutions
				Administration costs
				Community acceptance

*Continued overleaf*

Table 2.1 Environmental policy evaluation criteria (continued)

Young (1997)	Barber (1998)	Environment Australia (1997)	Byron (2000)	Dovers (1995)
Dependability	Substance <sup>c</sup>	Environmental effectiveness	Cost	Information requirements
Precaution	Incentives for adoption	Efficiency	Efficiency	Dependability
Equity	Integration and internalization of environment into policies and operations	Acceptable burden of costs	Flexibility	Corrective or antidotal
Economic efficiency		Equity	Incentives	Timing
Dynamic and continuous incentives		Compatibility with existing instruments	Dependability	Adaptability
		Acceptable administrative costs	Effectiveness	Flexibility
Administrative feasibility and costs	Independent verification	Community acceptance	Certainty	Cost and efficiency
	Inclusiveness and public participation		Acceptability	Cross-sectoral effects <sup>d</sup>
Community and political acceptability	Transparency		Equity	Equity
	Accountability		Information requirements	Political and institutional feasibility
				Feasibility of monitoring impact of instrument
				Enforcement
				Communicability <sup>e</sup>

Panayotou (1998)	Schmidheiny (1992)	De Clercq (2002)	Paton (2002)	Sauer et al. (2002)
Environmental effectiveness	Efficiency	Feasibility <sup>h</sup>	Environmental effectiveness	Environmental effects <sup>l</sup>
Cost effectiveness <sup>f</sup>	Flexibility of response	Capability <sup>i</sup>	Economic efficiency	Economic efficiency
Flexibility	Confidence in the regulatory environment	Impact <sup>j</sup>	Equity	Transaction costs <sup>m</sup>
Dynamic efficiency <sup>g</sup>	Gradual introduction	Resource development <sup>k</sup>	Transparency	Competitiveness effects
Equity	A level playing field		Openness to participation by third parties	Relationship with existing legal and policy systems
Ease of introduction	Transparency of compliance		Effect on industry behaviour	
Ease of monitoring				
Predictability				
Acceptability				

*Notes:*

- a. Including competitiveness, prices, income distribution and economic growth.
- b. Including management agency costs and negotiation and transaction costs.
- c. The instrument should solve and not avoid problems and, therefore, the instrument needs to be substantive, unambiguous and undiluted.
- d. The potential for the policy instrument to offer other benefits or costs aside from the achievement of the environmental policy goal.
- e. Can the particular details of the instrument and the reasons for its use be adequately communicated?
- f. Will the instrument achieve the specified target at the minimum possible cost to society?
- g. Does the instrument provide incentives for developing and adopting new, environmentally cleaner and economically more efficient technologies?
- h. Is the instrument administratively, legally and politically feasible?
- i. Is the instrument capable of achieving the (explicit and implicit) policy objectives?
- j. What are the expected/actual environmental, economic and social impacts of the instrument? This includes factors such as burden-sharing, free-riding and competitiveness.
- k. Has the formulation/implementation of the instrument enhanced the policy base? This includes aspects such as learning, relationships between actors and general attitudes and awareness.
- l. Includes the risk of failing to meet the specified targets.
- m. The analysis should consider the transaction costs against the costs that would be incurred by an alternative approach, and whether the instrument will lead to the transfer of some costs to business.

Table 2.2 *Environmental policy evaluation criteria – common features*

Criterion	OECD (1999)	OECD (1997)	Hundloe (1997)	Stanford (1997)	James (1997)	Young (1997)	Barber (1998)	Env. Aust. (1997)
Environmental effectiveness <sup>a</sup>	X	X		X	X	X	X	X
Economic efficiency <sup>b</sup>	X	X	X	X	X	X		X
Transaction costs <sup>c</sup>	X	X	X		X	X		X
Competitiveness <sup>d</sup>	X	X						
Soft effects <sup>e</sup>	X	X					X	
Innovation <sup>f</sup>	X	X	X	X	X	X	X	
Acceptability <sup>g</sup>	X		X		X	X		X
Equity <sup>h</sup>			X	X	X	X		X
Implementation feasibility <sup>i</sup>			X	X	X	X	X	X
Revenue raising		X						
Inclusiveness and public participation					X			

Criterion	Byron (2000)	Dovers (1995)	Panayotou (1998)	Schmidheiny (1992)	De Clercq (2002)	Paton (2002)	Sauer et al. (2002)
Environmental effectiveness <sup>a</sup>	X	X	X		X	X	X
Economic efficiency <sup>b</sup>	X	X	X	X	X	X	X
Transaction costs <sup>c</sup>		X					X
Competitiveness <sup>d</sup>					X		X
Soft effects <sup>e</sup>					X	X	
Innovation <sup>f</sup>	X		X				
Acceptability <sup>g</sup>	X		X	X	X		
Equity <sup>h</sup>	X	X	X		X	X	
Implementation feasibility <sup>i</sup>	X	X	X		X		X
Revenue raising							
Inclusiveness and public participation						X	

*Continued overleaf*

*Table 2.2 Environmental policy evaluation criteria – common features (continued)*

*Notes:*

- a. Environmental effectiveness encompasses issues such as whether the policy instrument will meet the policy objective (De Clercq, 2002), dependability and certainty (or predictability) (Stanford, 1997; Young, 1997; Byron, 2000; Dovers, 1995; Panayotou, 1998; De Clercq, 2002; Paton, 2002), substance, i.e. where the instrument is substantive, unambiguous and undiluted (Barber, 1998), timeliness, i.e. when will the instrument take effect compared to when it needs to take effect (Dovers, 1995), precaution (Young, 1997), whether the instrument is intended to be corrective or antidotal (Dovers, 1995), and the potential to offer other environmental benefits or costs aside from the achievement of the environmental policy goal (Dovers, 1995).
- b. Described by James (1997) as 'efficiency in management'. Environment Australia (1997), Byron (2000) and Dovers (1995) refer to both efficiency and cost while Stanford (1997) refers to economic efficiency in terms of the lowest economic cost. That is economic efficiency can be considered as either the optimal balancing of economic costs and benefits or as the minimum costs required to achieve a defined outcome (e.g. an environmental goal). The difference is frequently not explicit in the literature.
- c. Transaction costs include administrative, compliance and management costs (OECD, 1999; OECD, 1997; Hundloe, 1997; James, 1997; Young, 1997).
- d. As noted in Note (a) to Table 2.1, competitiveness is a subset of 'wider economic effects' in OECD (1997).
- e. Soft effects encompass behavioural and attitudinal changes, including the degree of integration of environment into policies and operations (Barber, 1998), effects on industry behaviour (Paton, 2002; De Clercq, 2002) and effects on the relationships between actors (De Clercq, 2002).
- f. Innovation includes incentives for improved efficiency and environmental performance (Stanford, 1997; James, 1997; Young, 1997; Barber, 1998; Byron, 2000) and dynamic efficiency (Panayotou, 1998).
- g. Acceptability requires that consideration be given to the views of different stakeholders in the policy process, including government, trade unions, business, NGOs and communities, and the relationship between these stakeholders. For example, when industry assesses the acceptability of a specific policy instrument, it is likely that aspects such as flexibility of response, confidence in the regulatory environment, gradual introduction (to allow time to adapt), a level playing field and transparency of compliance would be considered (Schmidheiny, 1992).
- h. Including distributional effects (Hundloe, 1997) and acceptable burden of costs (Environment Australia, 1997).
- i. Implementation feasibility refers to the likelihood that the favoured instrument can be implemented into the relevant social and institutional operating environment and includes consideration of issues such as flexibility in the regulatory space (Hundloe, 1997; Stanford, 1997; Byron, 2000; Dovers, 1995; Panayotou, 1998), ease of introduction (Panayotou, 1998) information requirements to effectively implement the policy instrument (Stanford, 1997; Byron, 2000; Dovers, 1995), ease of monitoring and enforcement (Stanford, 1997; Dovers, 1995; Panayotou, 1998), compatibility with existing institutions and instruments (James, 1997; Environment Australia, 1997), and cross-sectoral effects (Dovers, 1995).

A number of comments can be made about the applicability of these 11 criteria to voluntary approaches. First of all, revenue-raising is not generally an objective of voluntary approaches and, therefore, is not considered further here. It is however pertinent to note that the potential for revenue-raising may be a relevant factor when policy-makers are comparing voluntary approaches with other environmental policy instruments (for example, environmental taxes). The second comment is that the authors cited in Table 2.1 all use the term equity to refer to the manner in which economic costs and benefits are distributed between the parties affected by a policy instrument. For the purposes of this analysis, equity issues (where appropriate) are considered as a part of the analysis of economic efficiency, transaction costs and competitiveness. Equity issues are also relevant to the question of acceptability, as the distribution of costs and benefits is frequently a strong influence on views of specific policy instruments. Third, inclusiveness and public participation have been identified as a specific issue in voluntary approaches, with many voluntary approaches being criticized by environmental groups because stakeholders are excluded from the process. Therefore, it is proposed that inclusiveness and public participation be treated as a distinct criterion, notwithstanding the relatively few sources in Table 2.1 that explicitly refer to inclusiveness or public participation. Finally, voluntary approaches cannot, and should not, be seen as existing in isolation from the broader regulatory and policy frameworks within which companies operate. For example, existing regulatory processes may militate against the introduction of new voluntary approaches into the regulatory space, or voluntary approaches may influence the development of policy through, for example, removing the need for new regulation to address a specific issue. Consequently, the criterion 'implementation feasibility' is renamed as 'law and public policy issues' to capture questions about the implications of voluntary approaches for broader law and policy processes. Table 2.3 summarizes the criteria that are used for

*Table 2.3 Criteria for the evaluation of voluntary approaches*

- 
- Environmental effectiveness
  - Economic efficiency
  - Transaction costs
  - Competitiveness
  - Soft effects
  - Innovation
  - Acceptability
  - Inclusiveness and public participation
  - Law and public policy issues
-



the evaluation of the voluntary approaches presented in Chapters 5, 6 and 7. The following sections discuss some of the practical issues in the application of these criteria.

## ENVIRONMENTAL EFFECTIVENESS

### **What is the Frame of Reference?**

The environmental effectiveness of a policy instrument can be expressed in terms of two main questions, namely whether the objective is ambitious or modest, and to what extent is the specified objective being achieved? It is important that the two are distinguished as the objectives of a policy instrument may be affected by factors such as regulatory capture<sup>1</sup> and bargaining, whereas the attainment of goals may be affected by factors such as whether the instrument is binding or non-binding and the manner in which investigation, enforcement and sanctioning are implemented. While the assessment of the ambition of the targets specified is a country-specific issue, requiring consideration of factors such as the past and current state of the environment, natural resource endowment, economic structure and development levels, and demographic trends, there is a broad consensus in the literature on environmental policy on the magnitude of the changes that are required to achieve a sustainable society. It has been argued that, within a generation, global resource productivity should be improved by a factor of two (that is, to reduce raw materials and energy consumption by 50 per cent over present levels) and resource productivity in industrial countries should be improved by a factor of ten (von Weizacker et al., 1997). These targets translate into annual reductions of 3 per cent for energy use and 4.5 per cent for raw materials (Stiller, 2000: 35–6). Other studies have suggested that, if the world is to reach social and ecological sustainability, energy and material use must be reduced by about 50 per cent overall and by up to 90 per cent in the high income countries (Solskone and Bertollini, 1998: 7; Trainer, 1998: 46–8). Even the World Business Council for Sustainable Development has agreed that ‘industrial world reductions in material throughput, energy use, and environmental degradation of over 90% will be required by 2040 to meet the needs of a growing world population fairly within the planet’s ecological means’ (cited in Solskone and Bertollini, 1998: 7). While the specific numbers vary, there is a broad consensus that significant reductions in resource consumption, energy use and pollution are required. Such reductions would represent significant challenges to present paradigms of growth and development, as well as necessitating drastic increases in the efficiency of material and energy use.

Although there is an increasing consensus around the magnitude of the changes that are required, the targets proposed frequently lack specificity in a number of important regards. First of all, the starting point against which reductions are assessed is rarely made explicit. For example, in a world economy that grows at rates of between 2 and 5 per cent per annum, a difference of ten years in the starting year (for example, if 2000 rather than 1990 is taken as the starting point) could mean that the baseline is between 21 and 62 per cent higher. Therefore, when looking at the specific numbers quoted, care is required to understand the starting or reference point. Second, there are a variety of paths that can be chosen to achieve these targets. It is here that many of the tensions between 'business' interests and 'environmental' interests occur. It is frequently argued by business interests that meeting strong environmental targets will lead to huge economic dislocation. This is something of an overstatement as most of the writing on the issue of sustainability recognizes that there is a need to allow time for business and society to adjust, where the time required is years rather than months.<sup>2</sup> However, delays in taking action are likely to significantly increase the risks of economic dislocation.

Environmental effectiveness also requires that consideration be paid to the dependability of the policy instrument. Dependability encompasses issues such as (a) whether there is a sufficient information base to allow effective design and implementation of the policy instrument, (b) whether the desired goals will be achieved, (c) when will the instrument take effect compared to when it needs to take effect, and (d) the potential for the instrument to be effective or continue to require modification in the face of changing social or economic circumstances (Dovers, 1995: 151). That is, the environmental effectiveness of policy instruments needs to be considered both in terms of the outcomes (actual or potential) and the likelihood (or reliability) of those outcomes. Consideration must also be given to the specific goals of policies. For example, pollutant emissions can be considered in terms of bulk totals of emissions (for example, greenhouse gas emissions) or in terms of emissions from individual facilities (where the issue of concern may be local public health or nuisance issues). That is, depending on the specific subject of the policy instrument, individual compliance or non-compliance may be more or less important, and non-compliance may even be acceptable if overall targets are achieved.

The environmental effects of a policy instrument may not only be those that were originally planned or predicted. Examples of the effects that could be seen from the adoption of a specific policy instrument include other environmental benefits (for example, reductions in sulphur dioxide emissions as a result of greenhouse gas emission reductions), transfers from one medium to another (for example, requirements to install air pollution control equipment may lead to the production of solid wastes that may require disposal or

treatment) and adverse impacts (for example, the installation of pollution controls may entail energy penalties). Evaluations of policy instruments should, therefore, take account of these unplanned or unintended environmental consequences.

### **Measuring Environmental Effectiveness – Pollution**

The quantity of pollution released is often a key measure of the effectiveness of environmental policy instruments, and many organizations use pollutant emissions as a primary measure of success of their environmental management efforts. While the consequences (for example, public health effects, impacts on local air quality) of such releases depend not only on the quantity of pollutants released but on factors such as other sources of pollution, pre-existing (or background) pollution levels, the number of people exposed to the pollutant, the sensitivity of exposed populations and local meteorology (Ormerod and Sullivan, 2000), in practice, organizations tend to focus their attention on those aspects that they can control (for example, pollutant emissions). The assumption is that appropriate levels of control will lead to defined or acceptable environmental outcomes.

The techniques that are generally used by organizations to characterize their pollutant releases to air or water are continuous monitoring, predictive emissions monitoring (where the release rate of a particular substance is related to operational parameters that are already available), source sampling (where emissions are sampled at discrete intervals), mass balance (where emissions are determined based on the amount of material that enters a process, the amount that leaves the process and the amount shipped as part of the product itself), mathematical models that describe the chemical and physical properties of processes and activities, emission factors (which relate the release of a pollutant to a measure of activity that can be readily measured, such as the amount of fuel used) and engineering judgements (Sullivan and Woods, 2000). The decision on which techniques are used involves trade-offs between accuracy, cost and usefulness of data. It is often the case that the most accurate estimation technique is not used. In practice, monitoring data are only available for a small subset of the pollutants that are of concern and companies tend to use a combination of the techniques above to characterize their pollutant releases. For example, the majority of Australian facilities with licence requirements to monitor air pollution are only required to monitor for the so-called 'criteria pollutants' (oxides of nitrogen, oxides of sulphur, carbon monoxide, lead, particulate matter with a mean diameter of less than ten microns ( $PM_{10}$ )). However, the Australian National Pollutant Inventory requires facilities (depending on specific reporting thresholds) to report from a list of 90 substances (Sullivan, 1999).

Characterizing pollutant emissions is not an absolute science and even direct measurement can have significant uncertainties. All of the techniques for characterizing pollutant releases (even direct monitoring or measuring) contain uncertainties, with consequent implications for the evaluation of policy instruments. The potential errors and uncertainties associated with measurement techniques can range from a few per cent to an order of magnitude or more. These uncertainties generally cannot be described statistically and it is frequently difficult to obtain more than a ballpark estimate of uncertainty. These uncertainties include inherent variability within a source (that is, the measurement process may not capture variations in emissions over time), inappropriate measurement techniques, calibration and drift in the instrumentation (that is, producing the 'wrong reading'), sampling errors, miscalculation and errors in data handling and manipulation (Sullivan et al., 1998; Hanssen and Asbjornsen, 1996; for a practical example of how companies actually conduct these analysis, see Kolominskas and Sullivan, 2004). A specific issue is that the default emission factors that are widely used in environmental reporting tend to be poor predictors of the performance of an individual facility and the uncertainties associated with emission factors generally cannot be described using conventional statistical techniques (Hanssen and Asbjornsen, 1996; Sullivan et al., 1998). These uncertainties mean that supplementary data are required to ensure that pollutant emissions data are understood and placed in context. To enable a complete picture to be obtained (for example, if local air pollution is the issue of concern), it is necessary to know the estimation techniques used, the suitability of these techniques for the sources considered, details of the sources included or excluded, the time scale of relevance (for example, monthly, seasonally, annually), the geographical area to be included and the pollutants considered. Care is also required to ensure that data are not inappropriately interpreted or taken out of the context for which they were developed. To illustrate, much of the information presented in environmental reports is simply a bulk total of emissions. It is commonly the case that the reported data do not provide any indication of the temporal variations in these emissions (for example, where there may be concern about the short-term effects of such releases) or the sources of emissions (for example, through a stack or through a low-level vent).

### **What is Business as Usual?**

When assessing the environmental effectiveness of a policy instrument, the key question is the instrument's ability to induce concrete and additional impacts beyond the business as usual scenario (Krarup and Ramesohl, 2000: 33–6). That is, what would have happened had the policy or instruments not

been implemented? Ex post evaluations of the effectiveness of a policy instrument must also account for changes in circumstances (for example, economic conditions, changes in market sector) that may have reduced pollution below what would have been expected or increased pollution above what would have been expected from the policy. There are many practical issues involved in trying to distinguish the effects of one instrument from others, as policy instruments are rarely implemented in isolation and it is rarely possible to find a sound empirical basis that allows for the statistical isolation of a single policy instrument or to identify the factors that led to the identified changes (Krarup and Ramesohl, 2000: 36; Hutter, 1999: 16–17). For example, the analysis of a policy instrument targeted at greenhouse gas emissions from transport would also need to consider the effects of pressures for emissions controls on motor vehicles, fuel pricing policy, taxes on new and existing vehicles and broader transport policy initiatives. Furthermore, policy instruments are also generally implemented against a background of broader social and political changes such as structural change within an industry sector and technology improvements. To enable the environmental performance of a policy instrument to be assessed requires that a suitable ‘business as usual’ scenario can be defined. However, the question of what is ‘business as usual’ is contentious. Possible approaches for assessing the business as usual scenario are considered further in the case studies.

## ECONOMIC EFFICIENCY

### **Key Concepts from the Law and Economics Literature**

The traditional economic approach to environmental policy was to maximize social welfare by correcting for the market failures that environmental problems present (Helm, 1998: 8). Welfare economics emphasizes externalities and market failures in relation to public goods, while the theory of imperfect competition focuses on the inefficiency of monopoly power and imperfect information (Rose-Ackerman, 1988: 343–5; Cooter and Ulen 2000: 40–43).

Externalities are where the benefits or costs of an exchange spill over onto other parties. Negative externalities occur when the actions of one party impose costs on another party. Expressed another way, external costs arise because polluting sources bear no pecuniary responsibility for the costs or damages resulting from their emissions (Oates, 2000: 137). An example of a negative externality is environmental pollution. The presence of externalities may result in market failure, as the price of a good may not reflect its social value. Firms set their production levels based, in part, on the costs of

production. If the cost to society of pollution is not included in that costing, the firm will produce more than it should of the good which causes the pollution. In this context, there is a difference between the private marginal cost and the social marginal cost. The private marginal cost is the marginal cost of production for the facility, whereas the social marginal cost is the sum of the private marginal cost and the additional marginal costs involuntarily imposed on third parties by each unit of production (Cooter and Ulen, 2000: 41–3). From a public policy perspective, the aim is to restrict the output to the socially optimal, not privately optimal, level. Much of the thinking on externalities (and the public policy solutions that may be adopted to address externalities) is based on Pigou's *The Economics of Welfare* (first published in 1920). According to Pigou, in the presence of such externalities, the market cannot provide the right price signals to economic agents and, as a consequence, the market fails to maximize social welfare. The policy solutions to externalities (that is, forcing firms to internalize the costs of the externality into their production decision-making) include imposing emission standards, emission fees or tradable emission permits.

The other dimension of welfare economics is market failure in relation to public goods. In environmental policy, the key issue is the depletion of open access (or common property) resources by over use. This 'tragedy of the commons' (after Hardin's, 1968, famous article) occurs because no one party has the incentive to concern themselves with (that is, to pay for) the effect of their activities on others. Public goods have two closely related characteristics, namely non-rivalrous consumption (where consumption of a public good by one person does not leave less for any other person/consumer) and non-excludability (that is, where the costs of excluding non-paying beneficiaries are so high that no private profit maximizing firm is willing to supply the good). The consequence is that it is difficult for markets to provide public goods in a way that does not benefit everybody and, therefore, people have no incentive to pay what the goods are really worth to them. A possible policy solution could be to allow a single owner to manage the resource and set a fee for use which takes account of the costs of depleting the resource. However, common property resources are frequently too large for single ownership and, therefore, government ownership or direct regulation (that is, licensing) may be required.

The theory of imperfect competition focuses on market failures as a consequence of the inefficiency of monopoly power and imperfect information. From an economic perspective, monopolies tend to lead to prices being too high and/or the quantity of goods produced being too low. The general public policy solutions are either to replace monopoly with competition or to regulate the prices charged by monopolies. Severe informational asymmetries can disrupt markets so much that a socially optimal solution cannot be

achieved by voluntary exchange and it may be necessary to implement policy measures to overcome this issue (for example, through making certain types of disclosure mandatory).

### **The Neoliberal Economic View and the Challenge to Welfare Economics**

The policy solutions outlined above, which envisage a central role for government in addressing market failures, are challenged by the neoliberal economic view that environmental problems will be addressed ‘naturally’ through market forces. The argument is premised on the assumptions that technological change can overcome any constraints imposed by nature and that all problems can be resolved through pricing mechanisms. This approach suggests that there can be unlimited economic growth, unrestricted by the scale of human activities or the implications of these activities for the health and integrity of ecosystems. These arguments suffer from a number of important limitations. The first is that they presuppose an infinite (or effectively unlimited) source of resources whose exploitation is only limited by technology or cost–benefit boundaries (Daly and Cobb, 1994). The second is that the resources that are presently most threatened are those without markets, such as the oceans, the atmosphere and the stratosphere (the public goods discussed above). The third is that the price of many commodities (for example, coal, oil) does not actually reflect the scarcity or remaining reserves of the commodities but is much more closely correlated with production rates (Pearce, 1993: 5–6). The fourth is that financial values may not cover all relevant values and it may not be possible to reduce some values to simple economic terms (Rogers et al., 1997: 347).

These limitations created interest in accounting for intergenerational issues in economic modelling. Earlier approaches relied on the adjustment of the discount rate (that is, the relative value of a dollar (or other resource) received today compared to the value of a dollar received at some time in the future) used in economic modelling to account for intergenerational equity issues. However, positive discount rates lead to the preferences of future generations being discounted and, the higher the interest rate, the more the preferences of future generations are discounted.<sup>3</sup> Modern approaches have tried to define sustainable development in a way that overcomes the moral objections to discounting the preferences of future generations. One approach is to require that consumption in the future is at least as great as at present (Helm, 1998: 5). This approach effectively ignores the importance of natural resources such as biodiversity (that is, the maintenance of consumption rates could be at the long-term expense of the resource base) and could be interpreted as presupposing that present patterns of consumption are, or are close to, being sustainable. However, as noted above, significant reductions in current levels



of consumption are required. Another approach is to require that the next generation is left with a stock of capital no less than this generation has now, where capital encompasses man-made capital (houses, roads, equipment, infrastructure), the stock of knowledge and skills (that is, human capital) and the stock of natural capital such as natural resources, biological diversity, habitat, clean air and water (Pearce, 1993: 15). A weak form of this requirement is where the aim is to pass on an aggregate capital stock no less than the one that exists now but where we are indifferent to the form in which the capital is passed on. This assumes that the forms of capital are completely substitutable for one another where there is no 'special' place for the environment. The assumptions around substitutability are not widely supported (Hamilton, 1996: 18; Helm, 1998: 5). Stronger approaches regard sustainability as adding something more to the optimization framework, by making other interventions subsidiary to environmental concerns. One such approach is to define as 'critical natural capital' those aspects of the environment (such as the carbon cycle, biodiversity, the ozone layer) that are critical to either human well-being or survival and to require that the weak sustainability rules described above be strengthened to require that, at the least, this critical capital stock is preserved (Pearce, 1993: 16–17; Brown Weiss, 1992: 408). The strongest conception of sustainability argues that while markets can determine an optimal allocation of resources, they cannot of themselves determine the optimal scale. This position argues that the economy/environment equation needs to be completely reconceived and that economic and population growth ought to be close to zero. While this paradigm seeks to limit the scale of human activities, it still allows for development through social preferences, community values and generalized obligations to future generations (Brunton, 2000: 140).

There are two major problems with the stronger conceptions of sustainability. The first is that there are fundamental differences between the supporters of the neoliberal economic view and those who argue in favour of stronger conceptions of sustainability as the necessary frame of reference for public policy. These discussions can be characterized as 'dialogues of the deaf'. The second is that, even where the need to value the environment is accepted, the environmental literature gives little guidance on how the environment should be valued or on how the trade-offs between produced and natural (non-renewable) capital are addressed or whether such trade-offs should be permitted.

### **Some Practical Issues in Assessing Economic Efficiency**

Cost-benefit assessment is widely used to characterize the economic costs and benefits of specific courses of action and to provide a structured framework



for trading off risks and benefits. Cost–benefit assessment builds on the work of Pigou, where the optimal level of pollution consistent with maximizing social welfare is the level where the marginal costs of abatement equal the marginal benefits. In this view, environmental policy is about the pragmatic business of measuring marginal costs and benefits and then using appropriate instruments to internalize the externalities. The general assumption underpinning this approach is that the free market will enhance the general welfare if all customers have perfect information about goods and services and all producers have perfect information about the costs of production. However, free markets tend to fail to produce the environmental quality that people want because market prices communicate little or no information about the environmental effects of producing or using a product, as these costs are external to the market. As a consequence, neoclassical economists support systems that will put a price on environmental externalities, thereby allowing market mechanisms to maximize general welfare (including environmental quality) and not just the production and consumption of goods and resources (see, generally, Baumol and Oates, 1988; Driesen, 1997). Optimal pollution is then characterized by the application of cost–benefit assessment which essentially has two elements, namely the monetization of costs and benefits and reliance on consumer demand to establish valuations. However, these two elements have not been widely accepted, with many non-economists of the view that environmental assets cannot (or should not) be monetized. In addition, there are technical limitations in cost–benefit assessment, which mean that the results from cost–benefit assessments tend to be very uncertain answers. These uncertainties include questions around how non-market goods are valued, how distorted prices are to be corrected, what are the correct discount rates to be used and how distributional effects are characterized (Ogus, 1998; Sen, 2000; Oates, 2000; Blais, 2000; Driesen, 1997). These criticisms are not intended to argue that cost–benefit studies should not be conducted as it is almost always relevant to know which outcome is the most economically efficient and the efficiency costs of pursuing environmental policy goals. However, it is important to recognize the uncertainties and other limitations with cost–benefit assessment when making decisions based on the results of such assessment.

Apart from the difficulties associated with valuing environmental resources in economic terms, there are also practical challenges in assessing the costs and benefits of environmental policy instruments. These issues are discussed further in the case studies presented in Chapters 5, 6 and 7 but are briefly outlined here. First of all, companies (at least in discussions with regulators) tend to overestimate the costs of compliance or to attribute costs that would have been incurred anyway to a specific policy instrument. Apart from the tendency to overstate costs, companies frequently downplay the benefits

associated with new policy instruments. For example, the requirement to monitor certain emissions or waste streams may enable organizations to identify opportunities for cost savings through cleaner production and similar initiatives. Second, the meaning of 'economic efficiency' varies, depending on the perspective being adopted. The term may refer to minimizing capital costs, minimizing capital and operating costs or optimizing costs and benefits. These differences are of particular importance at the organizational level when considering the manner in which decisions are made. For example, project-costing processes frequently focus on capital costs with limited consideration of ongoing operating costs (see, for example, the discussion in Sullivan et al., 2000). Third, indirect effects are difficult to characterize. For example, changes in price may cause demand to move to an alternative product, may lead businesses to reduce costs by reducing quality or safety or through 'creative compliance' with the letter if not the spirit of the law, or may lead to responses that were not predicted when the instrument was first implemented (Ogus, 1998: 63). The fourth issue is that policy instruments are rarely implemented in isolation and, in practice, governments tend to implement other policy measures such as tax breaks that compensate for adverse economic impacts or reinforce the objectives of the original policy instrument.

## TRANSACTION COSTS

The welfare economics tradition emphasizes the importance of government intervention to remedy externalities. However, this view has been challenged by some economists who have argued that there may be private alternatives to public intervention, in particular when bargaining in relation to property rights (Coase, 1960; OECD, 1999: 22; Leveque, 1999: 19). Bargaining occurs through communication between different parties, and these communications have associated costs. Coase used the term 'transaction costs' to refer to all of the impediments to bargaining and argued that, when transaction costs are zero, an efficient use of resources results from bargaining, regardless of the legal assignment of property rights (Leveque, 1999: 20). A corollary to this is that if transaction costs are high enough to prevent bargaining, the efficient use of resources will depend on how property rights are assigned.

While the original Coase theorem led to a large literature regarding whether there was any need for government intervention at all, it has been recognized that the market bargaining argument cannot be relied on for reasons ranging from difficulties in identifying affected parties through to potentially prohibitive transaction costs. Transaction costs can be divided into three broad elements, namely (i) search costs (in the context of voluntary approaches, this

could include finding suitable parties to negotiate with), (ii) bargaining costs (addressing private information, the costs in communicating with multiple parties, and unreasonable behaviour) and (iii) enforcement costs (such as information gathering, monitoring and sanctioning) (Cooter and Ulen, 2000: 87–8). Transaction costs may act as an obstacle to efficiency as they may obstruct bargaining by preventing affected parties from participating in negotiations or may lead to affected parties adopting an approach of rational ignorance in situations where the costs of obtaining information exceed the expected benefit from being informed (Cooter and Ulen, 2000: 207–12). From the perspective of the economy as a whole, transaction costs absorb potentially useful resources and, if all other things are equal, policy measures with lower transaction costs should be preferred.

Transaction costs are difficult to assess. The common issues are accounting for the time of relevant parties, allocating an appropriate financial value to this time and cost allocation (for example, reporting tasks are frequently combined, monitoring may meet a number of different objectives). One of the approaches used in this book has been to look at how the requirements of the different voluntary approaches compare to the requirements that would be imposed if it were a government programme. Glachant (1999) argued that transaction cost assessments should be comparative (that is, assessed relative to other institutional alternatives). Thus, while it may not be possible to assess the relative efficiency of the public versus the private sector, it is possible to make some general comments about the scope of the programmes under consideration and to assess whether tasks such as data acquisition, reporting and performance assessment are comparable to those that would be imposed in a mandatory programme.

Voluntary approaches have a further dimension in relation to transaction costs, in that at least some of the costs may be transferred to the participants in the voluntary approach. For example, an industry association may provide administrative support rather than a government agency. From a distributional perspective, the polluter pays principle implies that companies should internalize the costs associated with pollution control. The transfer of costs (including administrative costs) from the public sector to the polluting companies is consistent with this principle.

## COMPETITIVENESS

Competitiveness has been defined as relating to the ability of a country to produce goods and services that meet the test of international markets while its citizens earn a standard of living that is both rising and sustainable over the long run (OECD, 1993: 3). It is fair to say that this definition would probably

not be supported (at least in this form) by those that see growth as conflicting with the need to constrain or reduce consumption.

At the domestic level, the question is whether policy instruments have adverse effects on competitiveness through, for example, providing firms with the opportunity to collude and develop anti-competitive behaviour (such as price fixing or creating barriers to entry to markets). This may also have an international dimension as specific agreements may have the effect of acting as de facto barriers to entry, through the creation of non-tariff barriers such as additional compliance costs or performance requirements in order to gain market access (Mortensen, 2002: 470).

At the international level, the issues that need to be considered are industrial migration (for example, companies moving offshore to take advantage of lower environmental standards) and the potential for offshore companies to gain a competitive advantage against domestic firms. At the macro level, there appears to be no systematic link between environmental policy and international competitiveness, nor do low environmental standards appear to have led to significant industrial migration. For example, as noted by one commentator, 'study after study has concluded that differences in environmental compliance costs are rarely a serious competitiveness factor' (Esty, 1994: 159). The reason appears to be that environmental costs are a relatively low component of total costs and so are unlikely to affect competitive advantage. It has been suggested that Australian firms spend, on average, between 1 and 2 per cent of their revenues on environmental issues (A'Hearn, 1996: 41). Similar data have been reported for other developed countries (Bhat, 1998; Rugman and Verbeke, 1998). Other factors that tend to reduce the significance of environmental issues on international competitiveness are the tendency for environmental policies to be designed to minimize negative impacts (through rebates, subsidies, time deferrals), and the potential for environmental policy instruments to stimulate business improvements (such as improved efficiency) and create markets (for example, for environmental technologies). Even though the overall macroeconomic effects may be minimal, there may be negative impacts in specific industry sectors, in particular sectors that compete primarily on the basis of relative price, such as agriculture and resources. Both of these sectors are major components of the Australian economy and, as discussed in chapters 4–7, international competitiveness has been an important influence on the Australian environmental policy debate.

## SOFT EFFECTS

Soft effects refer to the behavioural, attitudinal and awareness changes that result from the implementation of policy instruments. Soft effects are difficult

to quantify and evaluate, as they tend to be non-specific, long term rather than short term and, frequently, quite diffuse. The soft effects that may be associated with the development or implementation of policy instruments include the integration and internalization of environmental issues into policies and operations (Barber, 1998: 21), the stimulation of self-organization and self-regulation of firms (Gunningham, 1999: 213), the development of capacity and expertise within organizations and within government on environmental management, and the facilitation of industry and government collaboration (for example, in the design and implementation of the policy instrument). Soft effects are of particular interest because of their potential to help overcome some of the barriers to improved environmental management within firms. Two barriers are of particular importance: (i) the emphasis on short-term financial performance, and (ii) scepticism regarding the potential business benefits of improved environmental performance.

Perhaps the most important barrier is the emphasis of most firms on short-term returns over longer-term business sustainability (Sullivan and Wyndham, 2001: 22–3; Gunningham and Rees, 1997: 375–6). It is, as is discussed further in the case studies, common to find that environmental expenditures with payback periods of more than one to two years are not implemented, even if such investments provide significant longer-term financial or other benefits, such as marketing, improved community relations or reduced risk. There may, therefore, be significant opportunities for energy or environmental performance improvements that are economically viable (and relatively risk-free) that are not being implemented. It is interesting that the argument that firms have not maximized their economic well-being runs counter to the literature on rational choice theory which assumes that firms will attempt to maximize their financial well-being or monetary compensation subject to the constraints imposed on them by consumer demand and the technology of production (Cooter and Ulen, 2000: 26–7; Blais, 2000: 244; Spence, 2001: 919–25). In practice, however, firms tend to make sub-optimal choices among competing options, where the courses of action chosen tend to be those that are satisfactory (or good enough in the circumstances) and avoid uncertainty. Bounded rationality captures the insight that actors often take shortcuts in making decisions that frequently result in choices that fail to satisfy the utility maximization prediction. In addition, actors tend to use a range of heuristics (rules of thumb) to assist in their decision-making processes (Korobkin and Ulen, 2000: 1075–6, 1085). One such rule of thumb is that expenditures with a payback period of more than two years should not be adopted. Such approaches are not necessarily incompatible with rational choice theory. For example, the costs of acquiring information may be prohibitive compared to the benefits of obtaining the information and the uncertainties that are of concern may relate to the long-term survival of the

business (for example, short-term concerns may dominate decision-making processes).

The second barrier is the lack of knowledge of the business benefits of improved environmental performance. For example, in a 1997 survey, 31 per cent of respondents from Australian industry indicated that they saw no financial benefits associated with improving environmental performance (New South Wales Environment Protection Authority (NSWEPA), 1997a). A related issue is that firms without a history of managing environmental issues (such as small and medium-sized companies, firms that have traditionally been outside the environmental regulatory framework) commonly have limited knowledge regarding the importance of environmental issues. Soft effects can help in overcoming these barriers, for example, through the education and information-sharing that are a significant feature of many policy instruments (in particular voluntary approaches).

As a final comment, it is pertinent to note that improved knowledge of environmental issues may not change the environmental performance of firms. In fact, the opposite may be the result. For example, having developed a better understanding of the powers of the regulatory body, firms may decide that it is, in fact, cheaper to pollute than to comply. It could also be that the effect of improved relationships between companies and government agencies may be to make it more difficult for regulators to implement new regulations or effectively enforce existing ones.

## INNOVATION

Innovation can be defined as a process involving the search for and the discovery, development and adoption of new products, processes or organizational structures, and may refer to one or a number of the following: incremental change through continuous improvement to existing technologies and techniques, radical change, or changes in technological or technoeconomic systems (Foxon, 2003; Wakelin, 1997: 4–5; Wallace, 1995: 11). In broad terms, there are two interrelated processes that lead to innovation, namely technology-push (that is, the creation of new inventions or approaches through research and development) and demand-pull (that is, creating a demand for products and services) (Foxon, 2003; Freeman and Soete, 1997).

In the context of environmental policy, innovation refers to moves away from ‘end-of-pipe’ pollution controls to solutions encompassing the adoption of cleaner technologies, the integration of environmental concerns into existing management systems and processes, or the integration of environmental issues into strategic decision-making processes (Christie and Rolfe,

1995: 70–71). Environmental policy instruments may encourage or stimulate innovation through providing incentives for improved efficiency and environmental performance, such as encouraging information and experience-sharing between firms (thereby helping promote the diffusion of innovation) or enabling organizations to overcome the barriers that prevent them from exploiting economically attractive opportunities for environmental improvement (Foxon, 2003: 10–12, 24–5; Krarup and Ramesohl, 2000: 41–2).

Measuring innovation is difficult for a number of reasons. First of all, the relevant time horizon is likely to be long and, as with long-term macroeconomic effects, there are practical difficulties in assessing issues over long time periods. Second, the pace of innovation in pollution control technologies is unlikely to be driven by the pollution control policies in any one country. Third, the influences on technical change are many and complex, and environmental policy is only one of these influences. This is not to suggest that policy instruments cannot stimulate innovation but to highlight the fact that detecting or assessing innovation in the economy and attributing this innovation to a specific policy measure or instrument is extremely difficult.

## ACCEPTABILITY

Even if a policy instrument performs well against the other criteria presented here, the acceptability of the instrument to different stakeholders can affect whether and under what conditions the policy instrument is adopted. That is, certain policy approaches may be more or less acceptable to certain parties to the environmental policy process. For example, environmental non-governmental organizations (NGOs) have tended to regard voluntary approaches with suspicion because of concerns about regulatory capture and the dependability of voluntary approaches compared to command and control instruments. However, it is not necessarily the case that these views will apply to a specific voluntary approach, as evidenced by the fact that some NGOs have actually established their own voluntary initiatives and codes which they have invited companies to join. The assessment of whether or not a particular instrument (or policy approach more generally) is acceptable will depend on a series of factors: ideological views, the history of the specific instrument type, the specific features of the policy instrument in question, perceptions of the seriousness of the environmental issue in question, the economic impacts of the policy approaches, and so on. This requires that the views of different stakeholders be canvassed in relation to specific policy instruments.

## INCLUSIVENESS AND PUBLIC PARTICIPATION

Regulatory capture represents a specific issue for voluntary approaches. The potential for regulatory capture appears to relate less to the choice of policy instrument than to the manner in which the policy instrument is organized. Of particular importance are the rules which ensure that all interests are represented, control the discretionary power of the regulatory agency, require the abatement objectives and the schedule for their achievement to be made explicit, mandate ex post public policy evaluation and ensure credible systems of sanctions (OECD, 1999: 36–8; Mascarenhas, 2002: 86–8). Voluntary approaches are of particular concern in this regard because of the central role of industry and the frequent absence of many of the safeguards that accompany government-led policy initiatives. Many voluntary approaches have been criticized because of the small number of organizations represented and the frequent absence of appropriate levels of public participation.

## LAW AND PUBLIC POLICY ISSUES

Voluntary approaches do not exist in isolation from the broader policy space and, when assessing the effects of a specific policy instrument, consideration needs to be given to the interaction between the specific policy instrument and the broader context within which policy is implemented. For example, in relation to voluntary approaches, consideration should be given to aspects such as impacts on the democratic process (for example, adequacy of public participation processes, information asymmetries), the feasibility of implementing the instrument into the regulatory space, the information required to implement the policy instrument, the ease of monitoring and enforcing performance and compatibility with existing institutions and instruments.

## NOTES

1. The theory of regulatory capture has emerged from the political science literature which suggests that regulation favours industry at the expense of other interest groups, even though the original intention may have been different (see further Stigler, 1971, and the detailed discussion of voluntary approaches in Chapter 3).
2. A project between Statistics Norway and Friends of the Earth to simulate the effects of various environmental demands on Norway's environmental and economic development found that there appeared to be substantial resilience in the economy when allowed 40 years to adjust and adapt. The study concluded that, even with harsh policy measures such as rapidly increasing environmental taxes, there would still be sustained economic growth, albeit at a somewhat slower pace (Hansen, 1996).
3. In the economics literature, it is generally suggested that the discount rate should be between 2 and 4 per cent for developed countries, higher for fast growth developing countries and



lower for countries experiencing declining per capita consumption growth (Kunte et al., 1998: 5). Assuming a discount rate of 4 per cent and that each generation is 20 years, the preferences of the next generation account for just 45 per cent of the present generation, the second generation (that is, grandchildren) 20 per cent and the generation that is born 100 years from now just 2 per cent. If a higher interest rate is used (for example, 8 per cent for developing countries), the preferences of the next generation account for just 21 per cent of the present generation and the generation that is born 100 years from now 0.04 per cent. Using a lower interest rate of 1 per cent, the preferences of the next generation account for 82 per cent of the present generation and the generation that is born 100 years from now 37 per cent.

## PART II

### Literature review



### 3. Environmental policy instruments

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#### INTRODUCTION

Public policy can be defined as a plan of action (or a decision not to take action) undertaken by a government to achieve some broad purpose affecting a substantial segment of a nation's citizens (Hill, 1997: 8–10). In this context, environmental policy instruments can be defined as the tools used to implement public environmental policy. Environmental policy instruments may be divided into four generic categories, namely command and control instruments, economic instruments, information-based strategies and voluntary approaches. The first three of these are described briefly below, followed by a more comprehensive review of the literature on voluntary approaches and a discussion of the manner in which voluntary approaches fit into the overall regulatory space.

#### **Command and Control Instruments**

Historically, command and control regulation has been the dominant government response to environmental issues. At its simplest, command and control regulation involves the promulgation of a set of rules, together with mechanisms (for example, monitoring requirements, enforcement processes) for ensuring that the rules are complied with (Baldwin et al., 1998: 3). Command and control instruments can be divided into three broad categories: design standards, performance standards and process standards (Gunningham and Sinclair, 1999a: 53). Design standards require that an approved technology be used for a particular process or for a specific environmental problem. Performance standards define the outcomes that must be achieved, but do not generally define the design or process which must be utilized, and process standards specify the procedures to be followed to achieve a defined result but do not specify the exact outcomes to be achieved. To illustrate the difference between the three categories, consider a facility that emits a certain pollutant (X) through a stack. A design standard could require that a specific type of pollution control equipment be fitted, whereas a performance standard could specify a maximum emission rate for pollutant X but not specify how this emission limit is to be met. That is, the facility operator would have the flexibility to decide how the pollutant is to be controlled to meet the specified

limit. A process standard could require that the facility takes every reasonable action to minimize or eliminate emissions of pollutant X. In practice, it is not uncommon to find that more than one type of command and control requirement is specified. For example, a facility may be required to use a specific type of pollution control and also to have a formal system of environmental management in place to control emissions of the pollutant.

Command and control approaches have the advantages of providing a consistent assessment framework, being transparent, minimizing 'arbitrary' decisions and having high predictability and high dependability, if adequately enforced (Wagner, 2000: 94–107). Command and control regulation also offers political legitimacy and allows government and regulators to be seen to be acting decisively in response to specific market failures (Baldwin and Cave, 1999: 33). However, command and control approaches have been criticized on the grounds that they are costly and inefficient, stifle innovation, are inflexible, lead to enforcement difficulties, create expensive monitoring and record-keeping requirements, focus on single environmental media rather than an integrated view of the environment, and focus on end-of-pipe solutions rather than cleaner production (DeSimone and Popoff, 1998: 18–20; Stigson, 1998; Panayotou, 1998: 182; Altham and Guerin, 1999: 63–4). These criticisms have created pressures for alternative approaches to policy implementation that are more efficient, provide flexibility and encourage the internalization of environmental costs (see, for example, the arguments in Holliday et al., 2002: 58–82). These pressures have been reinforced by broader changes such as the withdrawal of government from many areas of social policy, the shrinking tax base in many countries, and political concerns regarding domestic productivity and international competitiveness (Keohane et al., 1999: 110).

### **Economic Instruments**

Private firms, if left unregulated, generally do not choose a 'socially efficient' level of environmental protection as they are rarely, if ever, required to pay the full social costs of their actions. The aim of economic instruments is to ensure that organizations undertake pollution control efforts in precisely the manner and the degree that will (a) result in the most efficient allocation of the overall pollution control burden, and (b) ensure that levels of pollution are reduced to the societally most efficient level. Expressed another way, the objective is to ensure that pollution is controlled to the level at which the marginal benefits (or marginal costs of damage avoided) are equal to the marginal costs of control (Hahn and Stavins, 1991: 4–7; James, 1997). Economic instruments can be divided into broad-based economic instruments (for example, emission permits, pollution or resource taxes), supply-side incentives (that is, subsidies)

and liability regimes (for a useful overview and analysis of the strengths and weaknesses of different economic instruments, see Panayotou, 1998: 15–45). Economic instruments are seen as promoting environmental protection at a lower cost than conventional command and control approaches, through allowing decentralized and flexible decision-making and providing incentives for the development of new pollution control technologies. Other potential advantages of economic instruments include soft effects such as motivating change, raising the awareness of specific environmental issues, stimulating beyond-compliance approaches and generating revenue for government.

In practice, the outcomes that have been achieved from economic instruments have often not lived up to the theoretical predictions. Much of the literature on economic instruments relies on the assumptions that (a) business responds to incentives and pressures in an economically rational way (although, as discussed in Chapter 2, this is not necessarily the case), and (b) the charges imposed (whether by government or as an outcome from market trading or other negotiation processes) are equal to the societal costs of the damage caused by the activity (that is, the polluter pays).<sup>1</sup> However, fees or charges are generally set at levels that do not account for the full ‘externality’ associated with the activity. There are various reasons for this. Perhaps the most usual is that business groups have tended to lobby strongly against any efforts to introduce additional taxes or other costs on business, but another common reason is that where economic instruments become an important source of revenue, government’s interest may be in maximizing revenue rather than reducing pollution. That is, the level of pollution that maximizes government revenue may not correspond to the societally optimal level of pollution control, when all costs and benefits are taken into account. The consequence of setting fees or charges at a level that does not fully account for externalities is that the level of pollution abatement may not be optimal when all impacts (including externalities) are accounted for (Stoneham, 2000: 80–82).

Even if the fees are set at the correct marginal cost of abatement, the consequences of economic instruments may not be the same as the desired policy outcomes. A good example is the emissions trading permit system introduced in the United States for the control of acid rain (Munton, 1998). When the system was established, industry estimated that the costs would be US\$1000 per tonne of sulphur dioxide, while the Environment Protection Agency estimated a cost of US\$400–1000 per tonne. The actual costs have been approximately US\$90–100 per tonne. The reason is that the initial estimates excluded the lower-cost options (for example, fuel switching) available for the reduction of emissions of sulphur dioxide. However, the environmental outcomes of reducing emissions of sulphur dioxide were not all positive as the use of lower sulphur content coal, in some cases, meant that

facilities used coal with a lower calorific value (resulting in more coal being burnt to produce the same amount of electrical energy). Therefore, while the policy goal (that is, the reduction of sulphur dioxide emissions) was achieved at a significantly lower cost than originally predicted, there were also some undesirable side-effects.

Apart from the difficulties in setting the correct level of fees, other factors that affect whether economic instruments are a viable policy option are: (a) that economic instruments may not be suitable for application in all situations; (b) administrative and compliance costs may be significant and may negate the efficiency gains that result from the introduction of the economic instrument; (c) there may be significant equity issues (for example, the introduction of a carbon tax on certain fuels may particularly affect lower socio-economic groups who may not be able to afford the increased costs or who may not be able to transfer to lower cost (or 'cleaner') alternatives); (d) existing pollution control and other legislation may mean that not all of the theoretical benefits will be achieved; and (e) economic instruments can be perceived as 'licences to pollute' (Hahn and Stavins, 1991: 14, 38–42; Norgaard, 1997; Tietenberg, 1990: 21–31).

### **Information-based Approaches**

Access to information is widely recognized as an essential prerequisite for effective community input into environmental decision-making. Information-based approaches (for example, public reporting, community right-to-know programmes, product certification and ecolabelling, education and training, environmental impact assessment, state of the environment reporting) are increasingly being implemented as an integral part of overall policy approaches to environmental management (Haughton, 1999: 55–9; Gunningham and Sinclair, 2002: 122–3). The provision of more information to the public has three major consequences. The first is that public participation and interest in environmental policy decision-making processes may be broadened through providing a basis for dialogue with reporting firms. For example, environmental groups have used publicly available information to lobby firms to reduce emissions, and to make the general public aware of the potential consequences of pollution. The second is that there is increased pressure on government and on reporting facilities to ensure that emissions are minimized or eliminated. For example, the United States Toxics Release Inventory (TRI) is widely considered to have been successful at reducing emissions of toxic substances at a much lower cost than traditional regulatory approaches, although the exact magnitude and costs of the reductions remain unclear due to the effects of under- or over-reporting, changes in reporting requirements and the effects of other regulations (Fung and O'Rourke, 2000:

116–18). The success has been accounted for by a combination of public empowerment/lobbying, internal management and learning processes, opportunities for win–win outcomes, the pressure of environmental blacklisting and the pressures for regulation or other action. The third is that reporting processes can help improve business decision-making processes through encouraging firms to improve their monitoring and data acquisition processes, thereby identifying priority areas for pollution prevention and waste reduction (Barrera-Hernandez, 1997: 59–60; Young and Rikhardsson, 1996; Panayotou, 1998: 57).

Information-based strategies suffer from a lack of dependability and there is no guarantee that information alone will lead to improved environmental performance. The public availability of environmental information represents just one of the influences on the decisions made by companies. Furthermore, the provision of information relies on consumers or other parties who are able to check the quality of the reported data and/or take action (Machado, 1997: 285). This reliance on third parties for enforcement also raises questions about the legitimacy of these parties who may, effectively, be taking over some of the functions of government. In addition, the right to information frequently does not translate into a ‘right to act’. For example, requirements to report information are often accompanied by legal protections that mean that companies cannot be sued on the basis of this information (Gunningham and Sinclair, 1999a: 55). Finally, at the level of the individual firm, the availability of more or better information does not necessarily mean that the management decisions made will be any better, as companies may lack the ability or resources to make better decisions (Baldwin and Cave, 1999: 49–50).

## **VOLUNTARY APPROACHES**

### **Key Features**

In Chapter 1, voluntary approaches were presented as falling into one of four categories, namely individual or collective unilateral commitments, private agreements between polluting firms and those affected by the pollution, negotiated agreements between industry and public authorities, and public voluntary programmes. While this typology is useful for classification purposes, it says little about other features of voluntary approaches such as the degree of government involvement, whether the voluntary approach is individual or collective, whether the approach is local or global in scope, whether the approach is binding or non-binding, whether there is open or closed access to third parties, or whether the approach is target or implementation based. Each of these is considered briefly here.



Voluntary approaches can be described in terms of the degree of government involvement in the process. The extreme situations are where both rule-making and enforcement are carried out by the industry participants and where both rule-making and enforcement are carried out by government agencies. In addition, there may be hybrid forms of voluntary approaches, for example, where the targets are negotiated between government and the industry participants. In practice, even the strictest forms of government regulation will include some voluntary elements, while voluntary approaches are frequently implemented against the backdrop of some form of government sanction or some threat of regulation.

The number of organizations involved in a voluntary approach affects the scope (for example, geographic coverage, industry sector coverage, pollutant specific coverage) and influence (for example, if only a few companies are involved there may be limited impact on broader industry behaviour) of the approach. The outcomes achieved are also strongly influenced by the number of participants. If only a few firms are involved, it may be possible to set more stringent targets at the level of the individual firm than if wider participation is desired (in which case there may be pressure to set lower targets) (Gunningham and Rees, 1997: 363). While increasing the number of participating firms may reduce the administrative cost per organization, it may also significantly increase total costs.

Voluntary approaches can apply from the local level (for example, the individual firm or a specific local government region) through to the global level (for example, multinational codes of conduct that apply to suppliers). Global voluntary approaches may help create international norms around specific issues and provide an enforcement mechanism (through company purchasing power and/or contracts) to ensure compliance with these norms.

Voluntary approaches are 'binding' where there is some form of enforceable sanction if the requirements of the voluntary approach are not met (Bailey, 1999: 172). It has been argued that binding agreements are more likely to be effective than non-binding agreements (OECD, 1999: 19–20). However, the fact that a regime is mandatory may make firms reluctant to commit to it, may undermine some of the potential benefits of voluntary approaches (for example, flexibility, better relationships with regulatory bodies) and may lead to the standards being set at a lower level than they would otherwise have been.

Voluntary agreements are generally developed outside the standard regulatory framework and consequently the level of consultation with external stakeholders such as environmental groups varies. Where there is limited consultation or transparency, concern has been expressed about issues such as the credibility of the objectives and targets that are defined, the monitoring and

reporting processes, data interpretation and processes for ensuring the performance of participants in the regime.

Finally, voluntary approaches may involve defining either the targets to be met ('target based') or the measures that will be taken ('implementation based'). The distinction is important as an emphasis on process may mean that the desired outcomes are not achieved, whereas an emphasis on outcomes alone may mean that due process is not followed or that broader aims such as changing organizational cultures may not be achieved.

### **Environmental Effectiveness**

The environmental targets specified in voluntary approaches are generally suspected of being less stringent than those that would have been established in command and control regimes (Carraro and Leveque, 1999: 6–7). The reason is that most voluntary approaches give a central role to industry in the goal-setting process, and tend to exclude non-industrial stakeholders such as environmental groups and trade unions. It is, however, difficult to prove this argument as there is no guarantee that the targets set in regulation would be more stringent, as such targets reflect the relative bargaining power between the public authority and the industry (see the discussion of regulatory capture below).

The published evaluations of voluntary approaches are inconclusive on the ambition underpinning the specific targets that are adopted, although it appears that the outcomes from voluntary approaches often do not deviate significantly from business as usual (OECD, 2003: 14). For example, an assessment of the US chemical industry's Responsible Care programme for the period 1990–96 concluded that there was no evidence that membership of Responsible Care had positively influenced the rate of performance within the chemical industry (and, in fact, members seemed to be improving their performance more slowly than non-members) (see, further, King and Lenox, 2000). Some public voluntary programmes do appear to have achieved substantial outcomes, where the programmes succeeded in aligning a range of pressures (for example, public concern, financial benefits, reputation benefits). A commonly cited example is the 33/50 programme in the United States (OECD, 1998b: 28–9; Khanna and Damon, 1999). However, there is some debate regarding the emissions reductions that were achieved as (a) while 60 per cent of the 600 largest chemical companies participated in the 33/50 programme, only 13 per cent of small and medium-sized enterprises participated, (b) the evaluation of the programme suffered from difficulties in assessing the reasons for the reductions and it was not possible to isolate the effects of the 33/50 programme from other pressures (for example, regulatory, liability) on industry, and (c) there were limitations in the data used to evaluate

performance (for example, exemptions, changes in reporting processes, data based on estimates rather than measurement). Indeed, more recent studies indicate that only about one-quarter of the claimed emission reductions can be attributed to the programme itself (OECD, 2003: 59–60; Khanna and Ramirez, 2004: 50–53).

It has been argued that the voluntary approaches that have achieved the most substantial outcomes are those that have established an effective system of sanctions or have offered the greatest rewards (for example, tax rebates, collective benefits, simplicity of licensing arrangements) (Krarup and Ramesohl, 2000: 57). However, the creation of a very strong regime may undermine support for the voluntary approach, either by increasing the reluctance of organizations to participate or by creating pressure for the targets to be lowered before organizations will participate. It may be that focusing simply on the sanctions within the voluntary approach is too narrow as it is likely that there will be a range of influences on the decision to participate including community or NGO pressures, the need to protect the company's reputation, enhanced market opportunities, pressure from industry peers and the identification of win-win opportunities (Hanks, 2002: 171–3). From an economic perspective, the gain from voluntary approaches depends on the relationship between the number of participating organizations and the net individual pollution abatement cost-benefit curves. For example, in some situations the maximum net benefits results when all firms participate in the voluntary approach (an example could be a voluntary approach to avoid regulation) whereas in other situations, the maximization of net individual benefits relies on excluding certain organizations from the voluntary approach (an example could be where the voluntary approach allows for product differentiation). It may also be that focusing specifically on targets is too narrow an approach as it has been argued that the main benefits resulting from voluntary approaches result from the 'continual improvement' philosophies that often underpin such approaches (see De Hoag, 1998) or through the stimulation of innovation (see below).

Another question is whether the targets set in voluntary approaches will be achieved. While many voluntary approaches have failed, there is evidence that voluntary approaches can meet their defined goals, in situations where the voluntary approach is administered appropriately and has the support of those involved (Gunningham and Rees, 1997: 406; OECD, 1999: 105–6; Krarup and Ramesohl, 2000: 34–6; OECD, 2003: 11; Baranzini and Thalman, 2004: 23–4). Of course, this may be a trivial argument in that it may be seen as arguing that 'voluntary approaches either work or they don't work'. A more positive conclusion is that where there is commitment to achieving the goals or objectives of a voluntary programme, the goals or objectives can be met. This conclusion should be treated with caution as the fact that targets are

achieved may reflect the limitations of the targets that are set (for example, the targets may represent business as usual outcomes).

Industry has been suspected of using voluntary approaches to capture environmental policy, so that regulation or policy favours industry at the expense of other interest groups (OECD, 1999: 34). There are two dimensions to regulatory capture, namely the low targets that are set in voluntary programmes and the manner in which such programmes are used to avoid or forestall regulation. The existence of a voluntary approach is often used by companies to argue that regulation is not required or, if regulation is seen as necessary, that the targets specified in the voluntary approach represent acceptable targets for industry (OECD, 1999: 25; Sugiyama and Imura, 1999: 133; Maxwell et al., 2000: 583; Baranzini and Thalman, 2004: 138–9). If organizations succeed, policy is said to have been ‘captured’ by industry. While capture is relatively easy to describe in qualitative terms, it can be very difficult to assess in practice as every form of regulation involves some degree of negotiation or dialogue between industry and government. Business, clearly, has an influence on the manner in which government operates and makes decisions. This influence is dependent on factors such as the economic power of business, the influence of economic issues and values on government decision-making, the nature and extent of relationships between business and the state and the influence of third parties on the bargaining process. Large companies and their industry associations are particularly able to exert their influence effectively because of their well-organized nature and their ability to provide detailed cost–benefit assessments and other information to support their negotiating positions (Hancher and Moran, [1989] 1998: 149–51; James, 2000: 333). Bargaining may lead to better outcomes being achieved, as well as enhanced communication between regulatory bodies and regulated parties (Black, 1998: 104). Ultimately, the potential for regulatory capture relates less to the choice of policy instrument than to the manner in which the regulatory approach is organized. Of particular importance are the rules that frame the regulatory process, especially those that ensure that all vested interests are represented, control the discretionary power of the regulatory agency, require the abatement objectives and the schedule for their achievement to be made explicit, mandate ex post public policy evaluation and ensure credible systems of sanctions (OECD, 1999: 36–8). In this context, voluntary approaches present a specific issue as many of the necessary safeguards (for example, groups that are sufficiently organized and resourced to act as effective watchdogs, the availability of sufficient information to differentiate between commitments that represent genuine abatement efforts and those that are simply business as usual, the ability to limit collusion between agencies and industry interests) are frequently not available. Finally, policy can also be captured by stakeholders other than industry. While much of the literature

focuses on the influence of business, other well-organized groups, such as trade unions, can also move to capture policy or have an influence on the decision-making process (Pildes and Sunstein, 1995: 99; Spence, 2001: 962–3). This can be of particular relevance in situations where business is not greatly interested in an issue or where business opinion is divided (Gamble and Ku, 2000: 253–62).

The credibility of many voluntary approaches has been affected by ‘free-riders’ (Gunningham and Sinclair, 2002: 99; OECD, 2003: 13).<sup>2</sup> That is, even though individual organizations may benefit from collective action, organizations that do not participate (free-riders) may also benefit. Free-riding is a particular problem for voluntary approaches given that they lack many of the virtues of state regulation in terms of visibility, credibility, accountability, compulsory application, tighter standards and sanctions (Gunningham and Sinclair, 2002: 99). The main forms of free-riding are where all parties agree to the terms and conditions of the voluntary programme but some merely feign compliance, and where part of the relevant industry refuses to sign up to the programme (Gunningham and Rees, 1997: 393). The greater the number of organizations involved in a voluntary approach, the greater the temptations to free-ride, as there is a lower likelihood of detection and the benefits of cheating are likely to be greater. The ability to control free-riders depends on factors such as whether organizations are aware of each other’s behaviour and are able to detect non-compliance, the history of cooperative action, the ability to punish or sanction non-compliant behaviour and the presence of market or other pressures to ensure that organizations comply. A further point is that (depending on the issue in question) individual non-compliance or free-riding may be of more or less concern. For example, if dealing with acute local pollution effects, individual non-compliance may be important whereas, if dealing with a broader scale problem such as global warming, individual non-compliance may be of less concern than whether or not the broader goals of the programme are met. Even if individual non-compliance is not of concern from the perspective of the outcomes achieved, it may be that individual non-compliance undermines the credibility of the entire regime.

Finally, voluntary approaches tend to suffer from a lack of information (Bailey, 1999: 175–6; OECD, 1999: 92; Paton, 2002: 40). Common problems are ambiguous targets and monitoring results, the unavailability of monitoring data, the lack of suitability of reported information and the absence of interim targets. For example, a European Environmental Agency (EEA) analysis of negotiated agreements found little available data either to evaluate the reference scenario prior to the agreement or to assess the current situation with the agreement in effect (EEA, 1997). This limits the transparency and, hence, the accountability of participating firms and, therefore, may also undermine the credibility of the voluntary approach with external stakeholders.

Furthermore, the absence of these data makes it very difficult to attribute changes to the initiatives that caused them.

### **Economic Efficiency**

The financial benefits of voluntary approaches to participating organizations potentially include improved compliance, better management of litigation risk, improved brand or reputation, better relationships with shareholders and society, and better morale and culture within the organization (OECD, 2001: 18–19). However, there have been few published economic analyses of voluntary approaches and those that have been completed have tended not to account for the level of environmental protection achieved (Segerson and Micelli, 1998: 110). The conditions under which voluntary approaches produce efficiency benefits remain unclear as the theoretical models are very sensitive to assumptions around relative costs, asymmetries of information, transaction costs and the number of decision-makers and, therefore, the results are frequently not generalizable (Paton, 2002: 43–4).

It appears that the primary economic benefits accrue to participating organizations through their ability to forestall or influence regulations. That is, even though voluntary agreements offer the potential for privately efficient outcomes, these may not be the same as the societally efficient outcomes. Even in relation to private outcomes, there is evidence that voluntary approaches do not result in economically efficient outcomes for the participating organizations. The reason is that the organizations participating in voluntary initiatives tend to adopt a rule of equal burden-sharing based on uniform standards, rather than differentiation based on the lowest or most economically efficient abatement costs (OECD, 1999: 109; OECD, 2003: 14). Despite this, voluntary approaches may provide financial benefits at the level of the individual firm, through allowing individual firms to allocate pollution efforts among their facilities or through allowing for time flexibility in reaching the final target (for example, where firms can arrange for their pollution abatement efforts to fit with their investment cycles). Industry has argued that the flexibility inherent in voluntary approaches enables environmental improvements to be made without forcing the early retirement of capital stock, avoiding the potential economic or job losses that such changes could otherwise entail (OECD, 1999: 46; OECD, 2003: 12). Perhaps more cynically, it could be argued that this is simply an excuse to avoid capital expenditure or indicates a lack of commitment to changing practices and activities.

The one exception to the rule of equal burden-sharing appears to be public voluntary programmes which can work well from the perspective of economic efficiency. The reason is that while the rules are set by public authorities

firms are free to choose to join if they see fit. Therefore, public voluntary programmes will tend to attract those firms with the lowest marginal abatement costs. Moreover, public voluntary approaches generally include information-sharing and technical support programmes to help firms identify and implement cost-effective solutions. There is evidence that if analyses and management systems are explicit requirements of a voluntary approach, organizations do consider potential savings in more detail than would otherwise have been the case (Krarup and Ramesohl, 2000: 41). The arguments regarding the economic efficiency of public voluntary programmes appear less robust in situations where membership of a public voluntary programme is 'compulsory' or where there are substantial threats or incentives to join. In such situations, firms beyond those with the lowest marginal abatement costs may join the programme, potentially resulting in economically sub-optimal outcomes being achieved. Some caution is required with this as it implies that firms conform to the utility maximization hypothesis whereas, in practice (as discussed in Chapter 2), this is frequently not the case and there is evidence that firms tend to achieve cost savings following from participation in voluntary programmes (Paton, 2002: 43). Given that firms have incentives to adopt least-cost options in the absence of external threats or signals (Carraro and Leveque, 1999: 8), it may be that strong external threats (for example, regulation) are necessary to encourage firms to participate in voluntary approaches, thereby allowing them to realize economic benefits that may not otherwise be achieved (Segerson and Micelli, 1998). If the threats are weak, the level of abatement achieved is likely to be low (Segerson and Micelli, 1999: 105).

### **Transaction Costs**

It has been argued that the transaction costs associated with voluntary approaches are lower than those for command and control instruments for two reasons. The first is that in voluntary approaches the participating organizations are better informed about their operating practices and processes than regulatory bodies and so can design and implement better compliance management systems. That is, the costs of accessing information and monitoring and enforcement are expected to be lower than in a comparable command and control instrument aimed at the same objective. In practice, however, many voluntary agreements include at least some prescriptive elements on how compliance is to be assessed (for example, by reference to standard methods for measuring pollution) which means that the flexibility for organizations to optimize these activities is limited. Even for a mature system such as the Responsible Care programme in the United States, it has been noted that the transaction costs may be positive or negative, although there are



no systematically gathered data to enable such an assessment to be made (OECD, 1998a: 19). It may be that voluntary approaches involve the transfer of administrative and compliance costs from government to private firms or to industry associations (Baldwin and Cave, 1999: 126) and, therefore, while the cost to government of such programmes may be less than traditional command and control approaches, the overall costs are not necessarily smaller. Furthermore, there is no inherent reason why tasks such as monitoring are cheaper when conducted by industry rather than government. For example, it is frequently the case that both industry and governments use private testing organizations to conduct specific monitoring activities.

The second reason why transaction costs may be lower is that the monitoring and reporting requirements associated with a voluntary programme may be less onerous than those of traditional regulation (OECD, 1999: 110). However, this appears to be more of a rhetorical argument than a general truth. For example, the reporting costs of a voluntary approach based on exceptions-based reporting (that is, where firms only report when there is non-compliance) would be expected to be lower than a command and control type system that requires all performance data to be reported. This does not imply that voluntary approaches are inherently more efficient than the command and control approach, but rather that there may be the potential for the administrative and compliance costs associated with the command and control approach to be reduced. Care is required with this conclusion as there may be other reasons why the additional information is required by government (for example, to track changes in performance over time). That is, the measures adopted to minimize total administrative costs (to government and to firms) may not be the same as the measures that could be adopted to minimize the costs to firms alone.

Finally, even though reducing transaction costs is clearly desirable, in a recent review the OECD (2003: 12) concluded that voluntary programmes where administrative costs are very low tend to run the risk of very poor environmental performance. That is, there may be trade-offs between transaction costs and environmental performance.

### **Competitiveness**

The competitiveness impacts of voluntary approaches need to be considered at both the domestic and international levels. At the domestic level, the key question is whether voluntary approaches have adverse effects on competitiveness through providing firms with the opportunity to collude and develop anti-competitive behaviour. Negotiated agreements and unilateral commitments have been suspected of promoting collusive behaviour amongst participating firms, possibly leading to competition distortions (for example,



through denying market access, price fixing, phasing-out products which may be competitors to new products) (Ogus, [1995] 1998: 376-377; Rikhardsson and Welford, 1997: 54). While the potential for collusion exists, there is limited evidence available to enable its level to be judged. Very few claims have been submitted to antitrust authorities (Carraro and Leveque, 1999: 9; OECD, 1999: 112). Furthermore, many countries have antitrust legislation that provides a legal remedy in the event of anti-competitive behaviour. While such legislation does not guarantee that anti-competitive behaviour will be eliminated, there are frequently strong penalties to discourage collusion. Carraro and Leveque (1999: 9) argue that the threat of collusion or anti-competitive behaviour is greatest in situations where a voluntary approach concerns a concentrated sector where a small number of firms dominate the sector. Interestingly, it is precisely these conditions (few industry players, high exit costs, history of cooperation) that also seem to offer the greatest potential for voluntary approaches to deliver substantial environmental and economic outcomes (Gunningham and Sinclair, 2002: 99; Baranzini and Thalman, 2004: 97).

Unlike collective negotiated agreements, public voluntary programmes do not involve negotiations among a group of firms. It has, therefore, been argued that such programmes cannot promote collusive behaviour and are unlikely to lead to adverse competition effects (OECD, 1999: 124). This may not be correct given that industry generally has an input to the design of public voluntary programmes and may use this input to promote its preferred approaches.

International competitiveness effects may apply in two directions. The first is that certain voluntary approaches (in particular, public voluntary programmes) may involve the provision of subsidies to participating firms. In practice, these subsidies are minor and tend to have minimal impact on international competitiveness. As yet, such programmes have not been the subject of complaints (for example, to the World Trade Organization). This may reflect the low levels of direct financial support associated with such programmes, or the fact that if membership of a public voluntary programme is open to all firms then the programme cannot be considered as a trade barrier. The second (and the greater concern in the literature on voluntary approaches) is the potential for voluntary approaches (in particular, unilateral commitments) to be a non-tariff trade barrier (that is, preventing market access to foreign firms) (OECD, 1999: 112). However, there is limited evidence to say whether or not this occurs in practice or the magnitude (or significance) of the issue.

### **Soft Effects**

Soft effects refer to the behavioural, attitudinal and awareness changes that

result from the implementation of policy instruments. Soft effects are often a stated objective of voluntary programmes. For example, voluntary approaches often explicitly ask for some form of cooperation and coordination between polluters (Baranzini and Thalman, 2004: 9). Voluntary approaches can provide a forum for the dissemination of information on pollution abatement techniques and collective learning, for the development of management competence, and for the development of new and improved forms of social interaction, leading to improved trust and relationships between the members of the industry, and between the industry and other parties such as government (Rees, 1997: 494–504; Sugiyama and Imura, 1999: 130–31; Krarup and Ramesohl, 2000: 41–2; OECD, 1999: 90–91; OECD, 2001: 9; Paton, 2002: 41). Voluntary approaches may have a particular role to play in assisting companies to achieve better compliance performance, in particular in situations where the regulated community does not fully know or understand the rules or where there are specific weaknesses in technical or operational management (OECD, 2000: 7; OECD, 2001: 17).

Voluntary approaches can help create consensus among the people or organizations involved about specific behavioural norms. One of the most interesting dimensions of this debate is the potential for voluntary approaches to significantly change industry associations. Much of the literature on voluntary approaches has been critical of the potential for industry associations to contribute to the enforcement of voluntary programmes, given that the primary purpose of such associations is to advance their members' interests, rather than to regulate their members (Gunningham and Rees, 1997: 372). In part, these criticisms reflect the reality that industry associations tend only to have weak incentives (for example, education, promotion) and weak sanctions (for example, peer pressure) at their disposal (Rees, 1997: 506; Aalders, [1993] 1999: 264; King and Lenox, 2000: 701). However, in situations where an industry decides to respond to a strong threat (such as regulation) through establishing a voluntary programme, it may be necessary to empower an industry association to act as a 'regulator'. While the industry association's powers are likely to be relatively constrained, the processes of negotiating the voluntary approach, defining a framework of principles and practices in relation to the industry's operations and creating the expectation of compliance with this framework are likely to create moral pressure on the industry to meet the values or targets specified. These pressures may also empower the industry association to take action to ensure compliance.

## **Innovation**

The potential for voluntary approaches to stimulate innovation is unclear. While learning processes (for example, education, the provision of

information, experience sharing, technical support) are common objectives, it has been argued that because of the limited targets set in voluntary approaches there is limited incentive for firms to innovate (OECD, 1999: 11, 112, 124). Specifically, if a target can be met with a business as usual approach, there will be little incentive to innovate to introduce a new technology (Carraro and Leveque, 1999: 8). However, if voluntary approaches are seen as the precursors to legislation, they may help firms anticipate regulatory developments by developing innovative technologies and approaches.

An alternative perspective is that the soft effects associated with voluntary approaches, together with the continual improvement philosophies underpinning many voluntary approaches, may enable organizations to adopt innovative approaches to environmental issues. These outcomes are difficult to detect or to separate from business as usual performance (or the ongoing improvements in performance that occur in the routine conduct of business).

### **Acceptability**

Opinions on the acceptability of voluntary approaches differ. While the acceptability of a specific policy instrument depends on the context (for example, the specific issue to be addressed, previous experience with the policy instrument), it is also the case that opinions on specific instruments tend to be informed by general views on the merits of the instrument. The views of three of the key environmental policy stakeholders (industry, government, environmental NGOs) are briefly outlined here.

Industry groups have supported voluntary approaches because of the potential financial savings and flexibility, the potential for industry to define its own standards, the potential to reduce or avoid regulation, and the reputation and public relations benefits of such approaches (Baldwin and Cave, 1999: 126; OECD, 2003: 21–3; Paton, 2002; ten Brink, 2002: 43). The views of the Business and Industry Advisory Committee (BIAC) to the OECD are representative of industry's views more generally. BIAC (in OECD, 2003: 21–2) has challenged the view that the effectiveness of voluntary approaches is questionable and the economic gains are relatively low, arguing that voluntary approaches are an important part of modern environmental policy. However, industry support for voluntary approaches is not universal, in particular where voluntary approaches are seen as the precursors of regulation or as ratcheting up the performance expectations of companies (Altham and Guerin, 1999: 62). Industry has also expressed concern that the release of information will either lead to the loss of certain sources of competitive advantage or allow NGOs and other parties to campaign against the company (ten Brink, 2002: 34–5). Free-riders, as discussed above, are another potential disincentive for companies to participate in a voluntary approach.

Governments have expressed interest in voluntary approaches as a means of reducing cost burdens on government and industry, accelerating the implementation of policy and creating the potential for win-win outcomes (ten Brink, 2002: 32–4). Other benefits may include the development of institutional capacity within government, the development of trust between government and industry and providing a tool for the implementation of policy. Industry support for voluntary approaches may also be important in making these instruments more politically acceptable (Gunningham and Sinclair, 2002: 109–10). However, institutional factors (for example, existing regulatory frameworks) and concerns regarding the dependability of voluntary approaches and the transaction costs associated with their negotiation are potential barriers to their adoption. In addition, voluntary approaches may impact on democratic processes, either positively (that is, enhancing or maintaining the ability of governments to pursue appropriate and effective environmental policies) or negatively (undermining the ability of governments to enact or implement appropriate environmental regulations). These impacts are of particular concern to government given that a primary objective of many voluntary approaches is to reduce the involvement of government in business decision-making processes (Pildes and Sunstein, 1995: 99; Ogus, [1995] 1998: 376; Sugiyama and Imura, 1999: 133).

Voluntary approaches have been criticized by environmental groups on the grounds of weak standards, ineffective enforcement, the exclusion of stakeholders and government, lack of credibility and transparency and the potential of voluntary approaches to weaken the regulatory framework or to delay the implementation of regulations (Altham and Guerin, 1999: 62). For example, while the chemical industry sees its Responsible Care programme as a leading self-regulatory scheme, environmental groups remain sceptical, regarding Responsible Care as having ‘more to do with resuscitating the industry’s image rather than working towards a clean and better environment’ (Karliner, 1997: 185–6). It has been suggested that NGOs see that they have to defend regulations from ‘an overzealous attack from the corporate sector’ (Barber, 1998: 19–20). These arguments may reflect a lack of trust in business rather than necessarily being inherent flaws in voluntary approaches as NGOs have been involved in voluntary approaches, which enable their specific issues and agendas to be advanced or act as a complement to existing legal frameworks (OECD, 1999: 46–7). For example, WWF, the environmental NGO, has argued that voluntary approaches could be valid instruments to implement stringent climate change policies provided that they promote effective environmental improvements, support cutting-edge technological development, are transparent and democratic, and ensure corporate accountability (Volpi and Singer, 2002).

## **Inclusiveness and Public Participation**

Regulatory capture represents a specific issue for voluntary approaches. The potential for regulatory capture appears to relate less to the choice of policy instrument than to the manner in which the policy instrument is organized. There are three specific issues around voluntary approaches that need to be addressed: (i) transparency, (ii) enforcement, (iii) third-party participation. Each of these is considered briefly here.

Several studies have raised concerns about the lack of transparency of voluntary approaches (EEA, 1997; Gaines and Kimber, 2001: 176). An absence of transparency means that it is not possible to hold the participants in the voluntary approach to account for their performance. To allow the credibility of the voluntary approach to be assessed requires that the abatement objectives and the schedule for their achievement are made explicit and that monitoring and verification data are made publicly available. This raises questions as to how the monitoring will be structured, how it will be financed and who will carry out the monitoring. Independent monitoring is generally not the norm in voluntary approaches. For example, in the Responsible Care programme, only ten of the 190 participating organizations have chosen to include third-party reviews (OECD, 1999: 90–91).

The enforcement of voluntary approaches is a specific area of concern given the central role of industry in the rule-setting and enforcement process. In general, the sanctions available are limited (Gunningham and Sinclair, 2002: 103; OECD, 1999: 36–8; Mascarenhas, 2002: 86–8). It is often the case that sanctions depend solely on the political intention to introduce public regulation (Mortensen, 2002: 468). While transparency can enhance accountability by enabling the performance of organizations to be subject to scrutiny, the provision of information does not necessarily imply that there is a requirement to take action.

Finally, voluntary approaches are of particular concern because of the central role of industry in the process and the frequent absence of appropriate levels of public participation (Gaines and Kimber, 2001: 171). It has been suggested that the exclusion of the public is a deliberate choice, as industry sees voluntary approaches as offering the potential for reduced government and NGO influence on its activities and operations (Paton, 2002: 45; Baranzini and Thalman, 2004: 126–8). This conflicts with the view that the involvement of third parties in an open and transparent process may also help to address some of the weaknesses of voluntary approaches, in particular the potential for capture (Gunningham and Sinclair, 2002: 107). The critics of voluntary approaches have argued that such approaches need to ensure that any private party with an express, legitimate stake in the policy issue should have the opportunity to be included as an active participant in the political decision

process, and to control the discretionary power of the regulatory agency and provide interested parties with adequate and equal opportunities to participate in all phases of the political decision process (OECD, 1999: 36–8; Mascarenhas, 2002: 86–8; Mortensen, 2002: 466).

## POLICY INSTRUMENTS IN THE REGULATORY SPACE

The preceding discussion has considered the strengths and weaknesses of voluntary approaches more or less in isolation from the regulatory space into which they are introduced. While certain of the law and policy implications of voluntary approaches have been highlighted (for example, the potential for voluntary approaches to reduce the need for government regulation), single instrument analysis fails to account for the reality that instruments do not exist in isolation from the regulatory space, that no single instrument will solve all problems (or, possibly, even any single problem) and that regulatory variables have a significant influence on the choice, design and operation of policy instruments. In addition, environmental problems are complex. Therefore, policy-makers need a range of instruments at their disposal. This is not intended to imply that all instruments should be used in all situations as there are practical limits to the ability of industry to comply, the costs may be excessive and not all instruments will be complementary. As a corollary, it cannot be assumed that any combination of instruments will be better than a single instrument approach and, in fact, the introduction of new instruments may have a variety of effects, not all of which are positive.

### **Policy Instruments in Combination**

While the selection of policy instruments is a highly context-specific issue, some broad comments and conclusions can be made about the manner in which instruments may be combined. First of all, environmental information is a critical element of environmental policy and virtually all environmental policy instruments rely on environmental information to underpin their implementation by providing a basis for the targets or outcomes to be achieved, enabling performance to be monitored by firms and by other stakeholders (for example, government, local communities) and providing a basis for enforcement (Gunningham and Sinclair, 1999a: 60).

Second, voluntary approaches are considered to lack dependability and, therefore, are likely to be more effective when used in combination with other instruments. Voluntary approaches can be combined with most forms of command and control legislation, as voluntary measures can encourage companies to move beyond the minimum performance benchmarks

established in legislation while non-participating firms (or free-riders) must still comply with regulation. The combination provides some dependability where, on their own, voluntary approaches could not guarantee that companies would meet minimum performance standards. It has been suggested that it is not appropriate to combine technology-based command and control approaches with voluntary approaches (Gunningham and Sinclair, 1999a: 56), but this is not universally true. With technology-based approaches, it is not uncommon to find that organizations have significant freedom in terms of how the equipment is operated and, therefore, voluntary approaches can complement technology-based standards through, for example, defining and implementing good operating practices. Voluntary approaches may also be used in conjunction with economic instruments, for example in situations where different aspects of the same problem are addressed to provide mutually supportive signals. While combining instruments can assist in overcoming the weaknesses of specific instruments, the process of instrument combination may lead to sub-optimal outcomes in certain areas (for example, the 'combined instrument' may be less efficient than the theoretical ideal, less dependable than required, or entail higher administrative and compliance costs).

Third, the sequence in which instruments are introduced may have an effect on the overall effectiveness of policy. Sequencing could refer to the introduction of a completely new instrument where another instrument had failed or could refer to the enforcement components of a specific piece of legislation. It has been suggested that such sequencing should follow a progression of increasing levels of intervention. For example, the credibility of a self-regulatory regime could be bolstered by underpinning the regime with the threat of introducing command and control legislation if the self-regulatory regime fails to meet its objectives. Care is required not to slavishly follow this rule on sequencing, as the issues in question (for example, acute public health effects) may demand a more interventionist approach or may mean that the time required to trial less interventionist approaches is not available.

In conclusion, when implementing policy the broad principles that should be followed are that complementary policy instruments rather than single instruments should be preferred; it should not be assumed that all instruments apply; preference should be given to less interventionist approaches; escalating responses should be used; third parties should be empowered; and the opportunities for win-win outcomes should be maximized (Gunningham and Sinclair, [1998] 1999: 306–7).

### **Voluntary Approaches in the Policy Mix**

This section develops the discussion of policy instruments in combination to



provide a model for the manner in which policy instruments fit together in the regulatory space. The model is based on the enforcement pyramid model developed by Ayres and Braithwaite (1992). The enforcement pyramid builds on the literature on game theory, in which participation in a voluntary approach is seen as a prisoner's dilemma game where cooperation is the optimal strategy until one of the parties defects from cooperation, often referred to as the tit-for-tat approach. In practice, many business relationships, including relationships with regulators and other stakeholders, endure for years. However, conditions change over the life of the relationship and parties must respond to these changing conditions as they pursue their own interests through the relationship. These long-term relationships require commitment. The experimental evidence is that the tit-for-tat approach is an efficient equilibrium to a repeated agency game. However, this assumes that the players can observe each other's moves (which is an important issue in the enforcement of voluntary approaches) and that they do not discount the future too heavily (see, further, Cooter and Ulen, 2000: 213–23).

The key principle underpinning the enforcement pyramid is that defection from cooperation is less attractive for a business when multiple deterrents are available than when only a single deterrence option is available (Ayres and Braithwaite, 1992: 36). For example, while it is not uncommon for regulatory bodies to have the power to withdraw licences, this sanction is so drastic that there would be heavy ethical and political opposition to such a solution for all but the most extraordinary offences (Ayres and Braithwaite, 1992: 36; Macauley, 1993: 264–5). The consequence is that if this is the only enforcement tool available, the regulatory body may not be able to enforce compliance. Equally, regulatory strategies based totally on persuasion and self-regulation will probably be exploited when the actors are motivated by economic rationality (Ayres and Braithwaite, 1992: 19). However, it is rarely possible to be confident in advance of which classification a firm falls into. Much of the literature is a stalemate between theories assuming economic rationality on the part of actors and theories assuming motivations such as complying with norms, self-identity, doing good or habitual behaviour, whereas in practice, the reality is that all of these descriptions are simultaneously both true and false. Even when firms are solely motivated by economic factors, there will be at least some degree of compliance with legislation. An example could be a situation where a failure to address specific issues could reduce productivity or increase tort liability. In such situations, the firm will 'naturally' comply with legislation, because the benefits of complying outweigh the costs. This is clearly an oversimplification as it does not account for the manner in which firms calculate the costs and benefits of environmental expenditures (discussed in Chapter 2) or the potential barriers associated with acquiring information (that is, transaction costs may impede a



perfectly rational decision). Notwithstanding this limitation, this analysis enables the development of a useful categorization for regulated firms in which the regulated community can be divided into those organizations that are (a) naturally compliant (that is, where compliance costs are less than zero), (b) conditionally compliant (where costs are greater than zero but less than the penalties that may be imposed for non-compliance), and (c) naturally non-compliant (that is, where the costs exceed the penalties that may be applied) (Fenn, 1993: 249; Lorei, 1995: 7). This categorization is somewhat simplistic as it ignores all of the other factors that affect firms' propensity to comply (such as the threat of inspection and punishment, self-interest, worry about compensation, reputation, organizational pressures for compliance, moral pressures) or not to comply (such as deliberate evasion, ignorance, inadequate supervision, poorly trained operators, indifference) (Hutter, 1999: 18–19; Henriques and Sadorsky, 1999: 87–8). Furthermore, in response to regulation, firms can adapt, comply, over-comply, comply in form but not in substance, evade or bargain with agencies to comply with some or all of the provisions of legislation (Macauley, 1993: 259; Arora and Gangopadhyay, 1995: 290–91; DiMento, [1989] 1999: 219). That is, the possibility of non-compliance can never be eliminated, irrespective of the form of the regulatory framework. There may also be over-compliance with regulations. This could be when firms anticipate stricter regulations, see longer-term financial or reputation benefits, or wish to send signals to regulators to tighten up standards for industry as a whole. Over-compliance may also result as a consequence of imperfect information where firms overestimate the probability of detection, incorporate penalties higher than simply direct costs (for example, reputation) in their decisions or include moral logic ('the right thing to do') in their decision-making processes (Spence, 2001: 968–72). The analysis of whether or not firms will comply with a specific regulatory regime leads to the important point that there are firms for whom compliance is not a 'natural' option. Ensuring that those firms that are naturally non-compliant do comply with legislation is a particular issue in voluntary approaches (see the discussion of free-riders above), and has been an important issue in the design and operation of the case studies considered in Chapters 5, 6 and 7.

The enforcement pyramid provides a framework for combining instruments as well as providing some guiding principles for the order in which instruments can be introduced into the regulatory space. The first principle is that the regulator should escalate responses when lower levels of intervention fail. The second is that the regulatory process should begin by assuming virtue on the part of regulated entities, but if this expectation is not met progressively more punitive measures may be adopted. The third is that the instruments available to regulatory bodies should be suitable for escalation (that is, pyramidal enforcement relies on a range of sanctions being available to the

regulatory body). While the exact form of pyramid will vary from jurisdiction to jurisdiction, the principle is that actors are most likely to comply if they know that enforcement is backed by sanctions that can be escalated in response to non-compliance. For example, the tiers of the pyramid used by a regulatory body could be persuasion, warning letters, civil penalties, criminal penalties, licence suspension and licence revocation (Ayres and Braithwaite, 1992: 35–6). Under the enforcement pyramid, voluntary approaches are preferred as they tend to be the least burdensome approach from the point of view of taxpayers and the regulated industry (Ayres and Braithwaite, 1992: 38). This appears to be particularly true in situations where the state negotiates the goal to be achieved with the regulated industry and then leaves the industry the discretion and responsibility of deciding how best to achieve this goal. Given that industry will be tempted to exploit the privilege of self-regulation, the state must also communicate its willingness to escalate its regulatory strategy to another level of intervention, should this be required (Ayres and Braithwaite, 1992: 38; Bailey, 1999: 172).

There are some practical issues that limit the usefulness of the enforcement pyramid as an analytical tool and mean that a more robust model for the environmental policy process is required. While the enforcement pyramid model focuses on the relationship between regulated entities and the regulatory agency, the pressures on business to address environmental issues go beyond those requirements specified in legislation. In practice, business may be accountable to a range of ‘regulators’,<sup>3</sup> including not only traditional regulatory bodies but groups as diverse as other members of the industry, industry associations, financial institutions, local communities, environmental groups and customers. That is, the enforcement pyramid model may be better described as the ‘multiple enforcement pyramids model’, where each pyramid relates to a different ‘regulator’. At any point in time, the different regulators will be at different degrees of involvement or at different levels of ‘enforcement’. For example, in the case of an organization emitting pollutants that may lead to public health or environmental effects, it may be that (a) the regulatory body is considering moving from self-regulation to licensing emissions, (b) other members of the industry are discussing the emissions with the organization, (c) local communities are seeking compensation or looking for the facility to be shut down, (d) other members of the local community want the facility to continue because of the local economic or employment benefits, (e) other government agencies want the facility kept open to maintain local employment, and (f) financial institutions may be threatening to withdraw insurance if the problem is not addressed immediately. Each stakeholder has its own pyramid with a hierarchy of available sanctions. For example, the hierarchy of sanctions available to an insurance company may be dialogue and education (to encourage improved performance), the offer of

lower or higher premiums, the imposition of specific conditions on the insurance policy, specifying activities or outcomes that are excluded from the scope of the insurance and the refusal to grant insurance. Of course, there is also the reality that even though one company may refuse to provide insurance (or provide insurance on reasonable terms to the company), there are also other insurers in the market or the company may decide to accept certain risks. The different stakeholders also have different degrees of influence on the organization. As an illustration, while local community concerns (even if at the peak of their enforcement pyramid) may have a limited influence on the decisions made by an organization, regulatory concerns (even if only at the level of dialogue) may be extremely important to it. The pyramids are not necessarily 'equal in size' and the incentives or sanctions available to particular stakeholders are different and will be of variable importance to different organisations. This complexity opens up a very important discussion. As noted above, firms have various motivations and, perhaps more importantly, these are not necessarily consistent between issues (or even within an issue). For example, a company may treat compliance with water emissions as a high priority (perhaps because of concerns about prosecution, the potential for complaints) but may see air emissions as a lower priority. The reasons for these discontinuities are not clear and, perhaps more importantly, cannot be predicted or assumed. Policy approaches that target a variety of motivations (legal, financial, reputation and so on) consequently have a greater likelihood of affecting key motivations and stimulating appropriate responses. Of course, there may be efficiency or transaction cost penalties associated with multiple targeting approaches but good instrument design should allow these negative consequences to be minimized (see, for example, the case studies presented in Gunningham and Sinclair, 2002).

The regulatory pyramids model relies on there being an ongoing relationship between the organization and stakeholders. In situations where there is unlikely to be an ongoing relationship (for example, a one-off customer, a regulatory body that rarely if ever conducts site inspections) the incentives for cooperation may be less. From the literature on game theory, these situations may be modelled as one-off games or (as in the insurance example above) as a game that is played a fixed number of times (see, further, Cooter and Ulen, 2000: 34–8). In such situations, the tit-for-tat approach may not be the best strategy and it may be that an alternative strategy (for example, defection from cooperation) is the most profitable for the firm. In these situations, the regulatory body may diverge from the strategy of gradual escalation to use some of the more punitive sanctions available. This may (for a government regulator) be the withdrawal of operating licences or, for an insurance company, the withdrawal of insurance or the refusal to pay in the event that a claim is made.

Even though the multiple enforcement pyramids model enables a more

considered approach to policy design and implementation to be adopted than the single enforcement pyramid of Ayres and Braithwaite, the model suffers from some of the same limitations. Specifically, the model is reasonable in situations where there is unlimited time available. However, for many environmental issues, the time available is limited (for example, irreversible environmental effects may be involved, there may be significant pressures for a development to proceed) and there may not be the time available to ascend the pyramid or to ensure that the optimal balance between flexibility and prescription is achieved. The consequence may be that voluntary or less intrusive approaches are not viable. A further issue is that the pyramids do not necessarily apply consistently between different facilities or even for different issues at the same facility. For example, emissions to air may not be of great concern to a local community whereas releases to water may be of great concern. Another example could be where different government departments have responsibility for different environmental issues. The consequence may be that broader policy objectives such as consistency and fairness are not met. Finally, the enforcement pyramid is simply a tool to assist in the design of policy or to assist in understanding the role that specific policy instruments can play in the regulatory space. Therefore, care is required to ensure that the pyramid is not treated as an absolute framework for policy design and implementation but rather as a tool to help structure discussions around environmental policy. There are a number of dimensions to this. The first is that there is the potential for the pyramid model to be seen as implying a linear ordering of sanctions and approaches. Enforcement behaviour rarely follows such linear frameworks and, in practice, the choice of regulatory mechanisms is a dynamic process and the instruments and approaches selected must take account of a range of factors including the regulatees' conduct, the availability of options other than command and control, and the urgency of the issue in question. The second is that the pyramid is not a detailed behavioural model and does not predict the manner in which organizations respond to external pressures. The strength of the multiple pyramids model is that it explicitly recognizes the pressures that can act on organizations and enables policy design and development to account for these pressures and for the 'regulators' that exert these pressures. In situations where there is a need for highly prescriptive legislation or strict sanctions, the more flexible parts of the enforcement pyramid may be excluded or not applied. In practice, the available policy instruments may be constrained by existing laws and not all of the alternatives may be viable. Therefore, the design and implementation of a voluntary approach must account for the specific legal and political context within which the instrument is to be implemented. Consequently, voluntary approaches do not necessarily provide industry with total freedom to determine the terms and conditions of its regulatory response and voluntary

approaches will be developed in the shadow of the law (existing or proposed) and existing policy objectives. There may be other barriers to the implementation of voluntary approaches such as a crowded regulatory space (that is, there may be limited room for the introduction of new policy instruments) or regulatory inertia (for example, public opposition to the weakening of the regulatory state, industry preferences for regulation in situations where regulation protects existing markets), which may mean that incremental changes are more likely to be accepted.

In addition to understanding the regulatory space, it is also necessary to understand the different 'regulators' that may be involved. While the primary regulator may be an industry association, other regulators could include other members of the industry or the public. If these regulators are ineffective, the fallback position may be for the government to regulate or to prosecute those that do not meet a certain standard of performance. One of the interesting issues in the debate around voluntary approaches is that it is frequently envisaged that parties other than government agencies and the nominated mediating institutions will act as regulators. For example, it has been argued that public access to information is required if the public are to assume their 'share of the responsibility for environmental protection' (Rowan-Robinson, 1998: 28; see also Roach-Anleu et al., 2000: 69–72). This raises important issues in terms of public policy. The legitimacy of non-government regulators could be questioned and it may not be reasonable or fair that the public or NGOs (or other non-democratically elected parties) are allowed to regulate companies. It is also questionable whether such parties have the ability to effectively police the actions or activities of companies and, even though markets may have a role to play, there is limited empirical evidence that customers will boycott companies or products (Bailey, 1999: 177). Finally, consumer pressures have tended to focus on very large or high-profile organizations, with the majority of companies tending to escape attention. The consequence is that it is generally agreed that the state needs to retain the right to intervene where necessary.

Subject to the caveats above, the multiple regulatory pyramid model does provide some guidance on the role that may be played by voluntary approaches in implementing public policy. Voluntary approaches may add to the levels of enforcement that are available (that is, providing a further step (or increment) that can be used by regulators), add another pyramid to the regulatory space, involve different actors (for example, industry associations), or add different pressures (for example, reporting processes). Voluntary approaches can, therefore, provide greater depth to the regulatory space by broadening the range of pressures and influences that can be brought to bear on companies. It has been argued that, in the United States, voluntary programmes have mainly been used to extend the scope of existing laws and,

therefore, are a 'soft' means for achieving incremental environmental performance (OECD, 1999: 89).

Another way of considering the role of voluntary approaches is through the different situations where voluntary approaches may be introduced. The first is where voluntary approaches are the sole or primary policy approach. While there are concerns regarding the dependability of voluntary approaches, it may be that, in particular in countries with reasonably well-developed systems of environmental law, there are other sufficiently robust mechanisms (for example, tort law, contract law) available to ensure compliance with the voluntary approach or to enable action to be taken in the event of adverse environmental outcomes. The second is where voluntary approaches provide an early policy introduction tool or are used to provide a transitional function (for example, where legislation is planned or being contemplated and where it is in industry's interest to take early action or to prepare for the introduction of legislation). In this situation, voluntary approaches could be used where regulation is considered premature (Gunningham and Sinclair, 2002: 107; Gaines and Kimber, 2001: 178). There is, therefore, an alternative conception of the enforcement pyramid in terms of staged implementation, where voluntary approaches form the early part of the development of a more comprehensive regulatory pyramid, and the remainder of the pyramid takes account of experience with the voluntary approach (or, it may even be the case that the remainder of the pyramid is not required). The third situation is where voluntary approaches are used as a supplement to existing regulations, through adding a tier to existing regulatory pyramids or adding a new pyramid to the regulatory space.

## NOTES

1. The other common assumptions are that all firms are technically efficient cost minimizers, all firms are price takers, the regulatory body has complete information about abatement costs in each firm, input and output prices are all determined through competitive markets and administration and transaction costs are zero (Common, 1996: 8).
2. In the economics literature, free-riders are those who benefit from but do not pay for the consumption of a public good (Cooter and Ulen, 2000: 106–8).
3. While some of the literature describes these as stakeholders, the term 'regulators' is used to emphasize that this discussion relates to those parties that can exert pressure on organizations or, at least in part, fulfil some of the functions of traditional regulatory bodies.



## PART III

### Voluntary approaches in Australia





## 4. The Australian environmental policy context

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### THE AUSTRALIAN ECONOMY

Australia is the fourteenth largest industrial economy in the world with a gross domestic product (GDP) in 2000/2001 of some A\$670 billion (Commonwealth of Australia, 2002: 2, 18). The Australian population of just over 19 million people is expected to grow by 32 per cent between 1990 and 2020 (Commonwealth of Australia, 2002: 14). The economy is highly dependent on fossil fuels as low-cost fossil fuels are abundant, hydroelectric resources are limited and nuclear power is not utilized (Commonwealth of Australia, 2002: 2).

Mining is one of the most important sectors of the Australian economy, representing approximately 9 per cent of GDP and providing about 5 per cent of employment (MMSD Australia, 2002: 41; Hancock and Roarty, 2002: 5; Commonwealth of Australia, 2002). Australia is the world's largest exporter of coal, bauxite, alumina, lead, titanium and zircon and one of the world's leading exporters of gold, iron ore, aluminium, nickel, zinc and uranium (Centre for International Economics, 1999b). The mining industry accounts for between 15 and 20 per cent of the market share value of the top 300 listed companies on the Australian stock exchange. Given that its economy and export capacity have been built on large non-renewable resource availability, Australian attitudes to global resource conservation have been highly influenced by issues of natural comparative advantage as well as international competitiveness (Vourc'h and Price, 2001: 5).

### THE AUSTRALIAN POLITICAL STRUCTURE

Australia is a federation of six states and two territories. Under the Australian Constitution, the Commonwealth government does not have direct or explicit powers relating to the environment although, under Section 51 of the Constitution, the Commonwealth can use powers relating to trade and commerce, external affairs, corporations, finance and taxation to promote environmental objectives (Bates, 2002: 55–73). The responsibility for land-use decision-

making and resources exploitation, and hence environmental management and protection, has traditionally lain with the states and local governments.

A nationwide environmental consciousness only began to develop in the late 1970s and early 1980s, and it was at this time that the need for a more coordinated approach to environmental policy began to emerge, in particular for issues of national significance and issues with spillovers between states. Following a series of High Court cases in the 1980s that established that the Commonwealth's powers in respect to the environment may well be more extensive than had been previously realized, the Commonwealth and state governments agreed that a cooperative approach to environmental issues was desirable (Bates, 2002: 73). Since then, the Commonwealth government has increasingly become involved as the initiator and coordinator of national strategies, drawn up and implemented in cooperation with the states. Examples include Australia's National Oceans Policy, the National Forests Policy, the National Greenhouse Strategy (see Chapter 6) and the National Strategy for Ecologically Sustainable Development (discussed further below).

In 1992, the Commonwealth, states and territories signed the Intergovernmental Agreement on the Environment (IGAE). The aim of the IGAE is to integrate environmental considerations into government decision-making at all levels and to provide a framework for implementing the principles of ecologically sustainable development. Section 2.2 of the IGAE recognizes that the states and territories have the primary responsibility for environmental management within their jurisdictions, but also recognizes the legitimate role of the Commonwealth in relation to national environmental issues. The IGAE established a process whereby the Commonwealth, state and local governments could work together in the development and implementation of national approaches to environmental protection (Bates, 2002: 417). Two important initiatives resulting from the IGAE were the establishment of the National Environment Protection Council (where all states, territories and the Commonwealth participate) and the introduction of National Environment Protection Measures which the National Environment Protection Council is responsible for formulating (to date, these have been developed for ambient air quality, the assessment of site contamination, the movement of controlled waste between states and territories, the National Pollutant Inventory, and used packaging materials; Lipman and Bates, 2002: 11–19). A further important feature of the IGAE is that it requires the Commonwealth government to consult with the states and territories before ratifying any international environmental treaties. It is pertinent to note that while ratification marks the formal acceptance by Australia of a treaty, ratification has no effect on domestic law within Australia. For the terms of a treaty to be binding within Australia, the Commonwealth is required to give effect to the treaty by enacting domestic legislation (Bates, 2002: 60).

Despite this increased coordination, the Commonwealth continued to be concerned that it did not have the legislative capacity to discharge its key commitments in international agreements and conventions. In addition, Commonwealth environmental legislation continued to be triggered by matters that were more properly the responsibility of state or local governments (Vourc'h and Price, 2001: 7). There was growing recognition from all stakeholders, including the states and territories, that these shortcomings had the effect of limiting the level of protection offered to the environment while also creating unnecessary delay, duplication and uncertainty for industry and the community. The response was to introduce the Environment Protection and Biodiversity Conservation Act 1999 which entered into force in 2000. Under the Act, activities that are likely to have a significant impact on matters of national environmental significance are subject to a rigorous assessment and approval process (Vourc'h and Price, 2001: 7; Bates, 2002: 78–84). The responsibility for these assessments and, in some limited cases, for the approvals, can be delegated to the states. The Act significantly extends the reach of the Commonwealth, giving the environment minister veto power over a large number of socially and environmentally significant projects throughout Australia (Vourc'h and Price, 2001: 7).

## THE NATIONAL STRATEGY FOR ECOLOGICALLY SUSTAINABLE DEVELOPMENT

In 1992, the Australian Commonwealth government published the National Strategy for Ecologically Sustainable Development to provide the framework for government action for the implementation of sustainable development in Australia (Commonwealth of Australia, 1992a). The stated objective of the strategy is to enhance individual and community well-being through a path of economic development that (a) supports the well-being of future generations, (b) provides equity within and between generations, and (c) protects biological diversity and maintains essential ecological processes and life-support systems. The strategy sets objectives for agriculture, fisheries, forestry, manufacturing, mining, urban and transport planning, tourism, energy, biological diversity, nature conservation, native vegetation, environmental protection, land-use planning, environmental information, environmental impact assessment, changes to government institutions and processes, coastal zone management, water resource management, waste management, pricing and taxation, industry and environmental policy, Aboriginal and Torres Strait Islander peoples, gender, public health, occupational health and safety, education and training, employment, international aid, population, research and development, conflict management, community

awareness, and monitoring and review. The guiding principles for the strategy are the precautionary principle, the need for decision-making processes to effectively integrate both long-term and short-term economic, environmental, social and equity considerations, the need to recognize the global impact of decisions, the need for a strong, growing and diversified economy, and the need for broad community involvement.

Sustainable development is now an accepted principle of environmental policy in Australia and has been adopted in a range of other policy measures and initiatives such as State of the Environment Reporting, the Intergovernmental Agreement on the Environment, National Heritage Trust, the Council of Australian Governments' working groups on water and salinity, the National Greenhouse Strategy, the National Strategy on Biological Diversity, the Regional Forest Agreements and the Oceans Policy.<sup>1</sup> These national level initiatives have been paralleled by legislative developments in the states and territories, many of which refer to the principles of sustainable development (Stein, 2000). Statutory requirements to have regard to the principles of sustainable development when making decisions appear not only in environmental legislation but also in legislation conferring discretionary power on government agencies to take or approve actions that might impact adversely on the environment and natural resources (Bates, 2002: 126–39; Lipman and Bates, 2002: 2–6).

The policy approaches for industry outlined in the National Strategy for Ecologically Sustainable Development are aimed at minimizing adverse economic impacts on Australian businesses. The objectives are for Australian industry to (a) move towards embedding the principles of sustainable development in day-to-day operations, and (b) adopt best practice in environmental management and whole life-cycle analysis (Commonwealth of Australia, 1992a). Since the release of the strategy, the policy initiatives adopted have focused on education and information sharing, including initiatives relating to eco-efficiency and cleaner production, as well as complementary activities at the state and territory levels (see, generally, Commonwealth of Australia, 2000c).

Despite these initiatives, Australia's legal and policy frameworks are struggling to reverse environmental degradation. The major environmental concerns for Australia include waste and pollution issues (for example, urban air pollution, waste disposal, air pollution, greenhouse gas emissions), resource depletion (for example, energy, native flora and fauna, depletion of forests, soil erosion) and conservation and heritage issues. These problems are compounded by the dependence of the Australian economy on agriculture, energy and minerals. Perhaps the most fundamental issue is that continued growth is seen as not only necessary but also inevitable (Vourc'h and Price, 2001: 5). In Australia, economic decisions have tended to take precedence

over environmental concerns and most decision-makers subscribe to the view that the wealth created by economic activities will overcome environmental effects. Despite the indications of harm to the environment there is no consensus about whether economic growth is consistent with environmental protection and, if so, in what form and at what level. These uncertainties have been used by the opponents of sustainable development as arguments for delaying the implementation of 'sustainability policies'. A further issue for Australia is that there is likely to be increased demand for Australia's commodity exports from countries such as China. This growth in demand is likely to conflict with environmental pressures such as the need to reduce Australia's greenhouse gas emissions. These issues are discussed further in the case studies, in particular on greenhouse gases (Chapter 6) and mining (Chapter 7).

## ENVIRONMENTAL POLICY INSTRUMENTS IN AUSTRALIA

Command and control approaches to regulation remain the backbone of environmental law in Australia (Lipman and Bates, 2002: 2; Papadakis and Grant: 2003: 27). While recent years have seen a greater flexibility in regulatory approaches, policy implementation in the states and territories still has strong regulatory underpinnings (Lipman and Bates, 2002: 2; Bates 2002: 15).

Until the mid-1990s, Australian governments had not widely used economic instruments as a means of implementing environmental policy. This has changed with growing use of economic instruments for issues as diverse as water conservation, salinity, air and water pollution control and biodiversity conservation. The types of economic instruments used have included taxes and charges, tradable permits and performance bonds (in particular in the mining sector), as well as broader initiatives around market structure and liberalization (for a useful overview, see Lipman and Bates, 2002: 49–100). It is interesting to note that the economic instruments that have been most strongly opposed are those that endeavour to impose a price on energy or greenhouse gas emissions (Lipman and Bates, 2002: 57; Dovers, 1994: 1). This opposition reflects Australia's strong economic dependence on natural resources, as such charges are seen as potentially undermining present patterns of production and consumption.

Both information-based and voluntary approaches have been widely used in Australia. The information-based approaches that have been implemented have included the National Pollutant Inventory (Sullivan, 1999) and various eco-labelling and other product labelling programmes (Papadakis and Grant, 2003: 42–3). Voluntary approaches have been promoted by both government

(public voluntary programmes) and industry. The public voluntary programmes have included the Greenhouse Challenge (see Chapter 6), and the National Packaging Covenant (Papadakis and Grant, 2003: 40–42). Unilateral commitments such as the Plastic and Chemical Industries Association's Responsible Care programme, the Australian Minerals Industry Code for Environmental Management and the Business Council of Australia's Principles of Environmental Management (see further Bates, 2002: 95–6) are also common. In some cases, these unilateral commitments are integrated into regulatory requirements. For example, the Victorian Accredited Licensing Scheme, discussed in Chapter 5, requires firms to have an environmental management system in place.

Overall, the picture shows reasonable diversity and complexity of policy techniques in Australian pollution control law. These represent a shift away from an almost exclusive reliance on direct regulatory tools and administrative discretion to an approach based on market choice and fiscal incentives in new, more flexible, regulatory frameworks (Lipman and Bates, 2002: 49). These changes also reflect government (at the Commonwealth and state levels) interest in reducing barriers and encouraging more efficient pricing of natural resources (Papadakis and Grant, 2003: 28). Overall, however, despite the increased use of alternatives to command and control, Australia still relies heavily on existing regulatory networks (Papadakis and Grant, 2003: 28).

## NOTE

1. For further details on the implementation of the Strategy, see the Department of the Environment and Heritage website [www.deh.gov.au/esd/](http://www.deh.gov.au/esd/) (last reviewed, 15 September 2004).

## 5. Environmental management systems

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Even though environmental issues appeared on the Australian political agenda in the early 1970s, it was only in the early to mid-1980s that compliance with environmental legislation became a priority for Australian firms. Historically, common law in Australia had separated the acts of corporations from the acts of individuals working for the corporation, which meant that individuals could not be held responsible for the actions of a corporation. However, in the early to mid-1980s, the Australian states and territories all overhauled their environmental legislation to impose liability on both corporations and on corporate directors and managers for the offences of their corporations (Lipman and Bates, 2002: 180–211; Howard, 2000). The penalties which can now be imposed include significant fines for corporate entities and fines (typically up to A\$250 000) and prison sentences (up to seven years) for individuals, and the directors and managers of firms can be prosecuted even if the firm has not been prosecuted. The general defences available to individuals are that the firm contravened the provision of the Act without their constructive knowledge, the person was not in a position to influence the actions of the firm or, if they were in a position of influence, they took reasonable precautions and exercised due diligence to avoid the contravention (the issue of due diligence is discussed further below). There have also been changes in the approach of regulatory bodies to the enforcement of environmental legislation, with most of the states improving the funding of their regulatory bodies, and a greater willingness on the part of regulatory bodies to use prosecution as an enforcement strategy. There have been two significant cases (in Western Australia and in New South Wales) in recent years where individuals have been prosecuted and custodial sentences imposed for pollution offences (Sullivan and Wyndham, 2001: 6).

In addition to the changes in environmental legislation, other drivers for companies to better manage their environmental issues have included greater awareness of the financial benefits of reduced raw materials and energy consumption, customer demand for environmentally sensitive products, information programmes (for example, green labelling, community right to know) and investor and insurance demand (Henderson, 2000; Mays, 2003; Environment Australia, 1998; Sullivan and Wyndham, 2001: 228–34; Wilmshurst and Frost, 1997; Gunningham and Sinclair, 2002: 25–6; NSW EPA, 1997a: 25).



The regulatory pressures, in particular, created interest in the potential for structured systems of environmental management to provide assurance to directors and managers that their companies were and remained in compliance with environmental legislation. In 1996, a pilot programme was conducted in Australia to trial the International Standards Organisation's (ISO's) ISO14001 Standard for Environmental Management Systems<sup>1</sup> (ISO, 1996). Although some firms in Australia had previously been certified to the British Standards Institution's Specification for Environmental Management Systems, BS7750 (British Standards Institution, 1994), the pilot programme represented the 'official' adoption of formal environmental management systems (EMSs) in Australia. ISO14001 was subsequently adopted as an Australian Standard (Standards Australia, 1996a). Since 1996, many Australian companies have developed and implemented EMSs to manage their environmental issues, and ISO14001 has provided the framework for the majority of these EMSs. Approximately 600 Australian organizations have had their EMSs certified to ISO14001.<sup>2</sup> This chapter reviews the Australian experience with ISO14001, from the pilot programme in 1996 through to the end of 2002.

## ISO14001

### **Key elements of ISO14001**

ISO14001 provides a model for EMSs to enable firms to meet, and continue to meet, their legal and policy obligations, based on a model of policy development, planning, implementation and operation, checking and corrective action and management review.

ISO14001 does not specify absolute requirements for environmental performance, other than requiring policy commitments to compliance with applicable legislation and regulations, pollution prevention and continual improvement. An environmental policy is a statement of the firm's desired outcomes from environmental management activities, providing a broad framework for the organization's actions and activities (Brophy et al., 1995: 129). The issues covered by environmental policies can include waste minimization, materials consumption, pollutant releases, product design, purchasing, planning and development, education and training and community relations.

The first stage in planning is for firms to identify those aspects of their activities, products or services that give rise to environmental impacts and over which the firm can be expected to have an influence. ISO14001 defines environmental aspects as those elements of a firm's activities, products or services that can interact with the environment, while environmental impacts are any changes to the environment, whether positive or negative, wholly or

partially resulting from a firm's products, activities or services. The term 'aspect' is used in ISO14001 to emphasize that firms should focus on those issues that are under their direct control. Depending on the firm, control could be exercised at the level of individual items of equipment, at the level of a unit process, or at the level of a complete process or a combination of a number of unit processes.

Firms also need to develop a procedure to identify and update legal and other requirements relevant to their environmental aspects. Based on the environmental policy, the identified legal requirements and the firm's significant aspects, ISO14001 requires that firms develop objectives and targets and an environmental management plan to ensure that these objectives and targets are met.

The process of implementing the EMS should involve the definition of roles, responsibilities and authorities and the provision of the resources necessary for the effective implementation of the system. Firms should ensure that all employees whose work may create a significant impact on the environment are competent on the basis of appropriate education and/or experience. In addition, all employees should be aware of the importance of conformance with the firm's environmental policy and procedures, the significant environmental impacts of their activities, their roles and responsibilities for environmental management and the potential consequences of departing from specified procedures. Firms should develop and implement procedures for the control of those activities that could have a significant impact on the environment (including accidental or emergency events) and should also develop procedures for internal and external communications. These procedures and the overall management system should be appropriately documented and reviewed and revised at appropriate intervals.

Checking processes include monitoring and measuring the key characteristics of the firm which can have a significant impact on the environment, tracking environmental performance against the firm's objectives and targets, assessing compliance with relevant environmental legislation and regulations, system auditing and corrective action. Records should be kept of all of these activities.

Finally, the firm's senior management should, at suitable intervals, review the overall management system to ensure its ongoing effectiveness, adequacy and suitability. The management review should consider the need for changes to policy, objectives and other elements of the EMS, based on the results of system audits, changing circumstances and the firm's commitment to environmental improvement. ISO14001 emphasizes the importance of senior management commitment to establishing the system and ensuring the system is developed, implemented and maintained. This commitment must include the provision of suitable resources for the planning, implementation and

maintenance of the system, as well as maintaining an active interest in the performance of the system and the effectiveness of the system in meeting the firm's goals for environmental management (see, further, Sullivan and Wyndham, 2001: 20–28, 53–5; Wilmshurst and Frost, 1997: 133–4).

ISO has issued a number of additional documents relating to environmental management. These include ISO14004, which provides further guidance on EMS development and implementation, as well as general guidelines relating to environmental auditing principles (ISO14010), EMS audit procedures (ISO14011) and qualification criteria for environmental auditors (ISO14012) (Standards Australia 1996b, 1996c, 1996d, 1996e).

### **The ISO14001 certification process**

The EMS certification process involves four main parties, namely national standards associations, accreditation bodies, certification bodies and client organizations. In Australia, the national standards body is Standards Australia, which has (amongst other publications) issued ISO14001 as an Australian Standard. Accreditation bodies are national government bodies authorized to set operating criteria for the operation of certification bodies. The Joint Accreditation System for Australia and New Zealand (JAS-ANZ) is the accreditation body for Australia and New Zealand. Certification bodies audit the management systems of client organizations to assess their conformance with the relevant standards.<sup>3</sup> The role of the certification bodies is to assess whether (a) the client's EMS complies with the requirements of ISO14001, (b) the client meets its own objectives (as articulated in policy statements and set objectives and targets), and (c) the client meets external requirements (for example, licence conditions).

In Australia, the general process for the certification of an EMS has been specified by JAS-ANZ (2003). Firms seeking certification are required to submit a formal application (including copies of the management system procedures and other core documentation of the EMS) to their chosen certification body. The certification body compares this documentation with the requirements of ISO14001 and provides a report of the review to the client organization. If the review indicates that the EMS is in line with the requirements of ISO14001, the certification body then proceeds to audit the firm's EMS. The audit should review the adequacy of the firm's process for identifying and assessing the significance of environmental aspects and impacts, and confirm that environmental licences are in place, that the EMS is designed to achieve the firm's environmental policy and that the internal audit process conforms to the requirements of ISO14001. That is, the audit should, first of all, confirm that the basic elements of an EMS have been implemented and are functioning effectively. The audit should confirm that the firm adheres to its policies, objectives and procedures, that the management system meets

all of the requirements of ISO14001 and that the firm is achieving its stated policy objectives. Any major system failures will mean that certification cannot be granted. Certification will not be granted until the certification body has established that effective corrective action has been undertaken to address these failures.

Based on the information gathered during the audit process, the certification body makes a recommendation on whether or not to register the firm's EMS. This recommendation, together with supporting documentation, is provided to JAS-ANZ to assess (and, generally, approve) the recommendation. Following certification, certification bodies are required to conduct periodic surveillance and reassessment to verify that the firm's EMS continues to comply with the certification requirements. In general, surveillance audits should be conducted at least once per year and reassessments at least once every three years (JAS-ANZ, 2003: 27–30).

## **Environmental Effectiveness**

### **Data availability**

Even by 2002 (that is, some six years after the introduction of ISO14001) there was a general lack of information on the environmental performance of Australian firms, including those with certified EMSs. The reasons relate to the manner in which environmental management had evolved in Australia. For the majority of firms, the initial priorities for their environmental management efforts were to achieve compliance, and to stay there. The consequence was that much of the information collected by firms was for the purposes of assessing compliance. As the assessment of compliance is generally a 'yes/no' question (for example, were pollutant emissions greater or less than a specified limit), gathering information on broader environmental performance was a lower priority for firms. For most firms, it was only following the achievement of regulatory compliance that they started to consider, more broadly, the concept of continual improvement and how this could be achieved and demonstrated (Sullivan and Wyndham, 2001: 233–4).

Public environmental reporting is widely seen as a means for firms to communicate their environmental performance to stakeholders. By 2002, there were a range of statutory and voluntary programmes in Australia that required firms to report on their environmental performance. The statutory programmes included the National Pollutant Inventory (which required facilities to report on their emissions of specific pollutants to air, water and land) (Sullivan, 1999); Section 299(1)(f) of the Corporations Law (which required public and private companies that satisfy two conditions out of (a) gross revenue over A\$10 million, (b) gross assets more than \$5 million, or (c) more than 50 employees, to report on their compliance with environmental regulation and

on other significant environmental issues); national, state/territory and local government State of the Environment reporting; and state and territory-specific licensing or regulatory programmes. The voluntary programmes that contained requirements for public reporting or disclosure included the Minerals Council of Australia's Code of Environmental Management (see, further, Chapter 7), the Australian Greenhouse Challenge (see Chapter 6), the Electricity Supply Association's Code of Environmental Practice and the Plastics and the Chemicals Industries Association's Responsible Care Programme. Despite the various regulatory requirements that were in place, it has been argued that the requirements for mandatory public disclosure of company information in Australia were much more limited than in many other developed countries (Deni Greene Consulting Services, 2001: 32–4). By 2002, it was increasingly clear that the various voluntary programmes had only partially filled the gap, with the majority of Australian firms choosing not to publish reports on their environmental performance. A study conducted at the end of 2002 noted that, of the 500 largest Australian companies (300 listed, 100 private and 100 unlisted public companies), just 57 (or 11 per cent) had produced public environmental reports (Centre for Australian Ethical Research and Deni Greene Consulting Services, 2003: 15–19). Of these, the majority (70 per cent) were in the mining and manufacturing sectors. The reasons advanced for the lack of interest in reporting have included (a) the perceived lack of public demand for such reports, (b) the costs of reporting, (c) the absence of strong regulatory pressures (outside those statutory programmes identified above), (d) the potential that self-reporting may open up the risk of prosecution, (e) the perceived absence of financial or other benefits, and (f) scepticism regarding the benefits of stakeholder engagement (Baird, 2000: 82; Deegan, 2000: 618). The reports that had been produced were of widely varying quality and rigour. While most reports provided quantitative data, few provided any indication as to the reliability of the data, although by 2002 an increasing number of firms had started to provide supplementary data through company websites to help in the assessment and interpretation of corporate reports. In addition, some government programmes, in particular the Greenhouse Challenge (see Chapter 6) and the National Pollutant Inventory (Sullivan, 1999), have sought to address these issues of data quality by providing standard workbooks and other tools to assist companies in the reporting of certain pollutants. A further issue was that there was limited consistency in the data reported and in the indicators used to assess performance. For example, in the mining industry, individual companies developed their own, company-specific performance indicators and performance targets, making it difficult to compare companies' social and environmental performance (see, further, the discussion in Chapter 7). The issues around data quality and lack of consistency were compounded

by the absence of requirements for report verification. For example, of the 57 companies identified as publishing reports, just 28 had, or intended to have, independent verification of their reports (Centre for Australian Ethical Research and Deni Greene Consulting Services, 2003: 15–19). Even verification processes are not the panacea that they might first appear. The report verifications that have been conducted in Australia have been criticized because of the general lack of rigour of the verification process, in particular the tendency of auditors to take the firm's numbers on trust and to focus on comparing the reported data against objectives and targets (Deegan, 1998: 250).

### **Environmental performance: regulatory compliance**

ISO14001 requires firms to identify their legal requirements and to ensure that this information is kept up to date. Many Australian firms have reported that this structured approach to identifying regulatory requirements enabled them to put their regulatory compliance systems on a more formal basis than had been the case in the past (see, for example, the case studies in Sullivan and Wyndham, 2001: 94–227). Two different factors appear to have contributed to this improvement. The first is that self-auditing offers the potential for more thorough and efficient auditing than periodic audits by regulators, as corporate auditors frequently have a greater depth of knowledge about the processes or activities in question and often have the ability to investigate issues in much greater detail than government inspectors (Pfaff and Sanchirico, 2000: 190). The second is that the standardization of practices and processes through an EMS provides assurance that activities are being carried out as planned (that is, in accordance with procedures). In the context of regulatory compliance, where the aim is to ensure a defined performance on a consistent basis, these standardization processes, together with audit processes to ensure that procedures are followed and continue to be followed, are seen as one of the most important outcomes from developing and implementing an EMS (Altham and Guerin, 1999: 66; Reh binder, 1995: 255). From discussions with Australian firms that had established EMSs (irrespective of whether or not these were certified to ISO14001), regulatory compliance appeared to be taken for granted. The comments made by two environmental managers, one working for an electricity generating company and the other for an electricity and water utility, are typical of the experience of many other Australian firms:

In our company, compliance with regulations is a given. We still have to report on compliance issues to our board and to the EPA [Environmental Protection Authority]. However, our real interest is in going beyond compliance.

Our EMS has enabled us to get into compliance and to stay there.

It is, however, difficult to determine whether the changes in compliance performance can be attributed to the established EMSs or to the changes in the regulatory framework. In practice, it appears that regulatory change provided the pressure and that EMSs were the vehicle for achieving the objective of regulatory compliance. That is, it was the threat of regulatory enforcement that first encouraged firms to consider establishing an EMS. The EMS then allowed firms to get into and stay in compliance. While most of the firms interviewed for this research indicated that compliance was achieved through the structured process of identifying regulatory and other requirements, assessing performance against these requirements, then establishing systems and procedures to ensure compliance and, where necessary, investing in appropriate pollution control measures, some of the environmental managers interviewed indicated that they had used their EMS to demonstrate their firm's commitment to environmental management and to support their negotiations with regulatory bodies. The credibility associated with having an EMS (or, more specifically, ISO14001 certification) then allowed them to negotiate a form of compliance that minimized their costs (for example, through meeting lower standards or by being granted more time to achieve compliance). The results of these negotiation processes were seen as beneficial as they allowed these firms to ensure that environmental expenditures were affordable and incurred at an appropriate time (for example, at the end of equipment life). The environmental manager of a construction company described these benefits as follows:

Having an EMS is a positive demonstration of our commitment to environmental management. It means that we are recognised as credible and as knowing and understanding the environmental dimensions of our business. We are able to tell the EPA [Environmental Protection Authority] what the best solutions and best approaches to specific issues are and we can manage these negotiations to provide benefits that are good for our business as well as good for the environment.

Finally, the majority of Australian firms that developed and implemented EMSs took the scope of regulatory compliance as encompassing all of the environmental obligations that the firm had agreed to meet (that is, not only regulation but also industry codes and other voluntary initiatives). Certification bodies took a similar approach, treating compliance with voluntary codes as being within the scope of the certification processes. In interviews, the auditors working for certification bodies indicated that they required firms to identify all voluntary commitments in their legal registers and to have appropriate systems and processes in place to ensure compliance with these commitments.

### **Environmental performance: beyond compliance**

Over the period 1996–2002, Australian companies viewed compliance with



legislation as the primary goal for environmental management. Given the historically relatively poor rates of compliance in many firms, such an emphasis was a necessary starting point for organizational environmental management efforts. However, ISO14001 also emphasizes the need for continual improvement. As the term 'continual improvement' is not defined by ISO14001, a range of interpretations could be adopted (for example, improvements in the operation of the management system, improvements in operations, reductions in emissions). Consequently, concern has been expressed that firms will adopt very limited interpretations of this term or simply focus on improving the management system rather than environmental performance (Altham and Guerin, 1999: 70; Krut and Gleckman, 1998: 28–30; Gouldson and Murphy, 1998: 23; Barber, 1998: 21). Even if very narrow definitions are adopted, continual improvement may provide important cumulative benefits, in particular where the lessons from environmental initiatives are propagated through other projects and developments (see, for example, Jenkinson, 2001; Stoll, 2001). It has been argued that EMSs can create an incentive for management to develop improvement cycles and that this process can take organizations far beyond the outcomes required by command and control legislation or market mechanisms (Altham and Guerin, 1999: 67). That is, environmental management can provide significant long-term benefits, resulting from incremental changes that, individually, may not appear significant.

Many of the firms that implemented EMSs (even those that focused primarily on regulatory compliance) reported significant benefits from adopting a structured approach to environmental management, including improved financial performance (through reduced raw materials consumption, reduced losses, reduced licence fees) and broader, if less tangible, benefits relating to the long-term sustainability and viability of the firm (Sullivan and Wyndham, 2001: 231–2). In many cases, these broader benefits were not identified at the start of the process of developing and implementing the EMS. This reflects the experience in other countries that have adopted EMSs. The experience has been that, in the first few years, firms achieve environmental improvements through good housekeeping and other relatively simple measures. However, the experience has also been that such improvements are not infinite and that there inevitably comes a time where 'easy wins' are no longer achievable and attention needs to be focused on larger projects, more extensive investigations of available opportunities, and possibly investment in new technology and changes in production or product design (Pedersen and Nielsen, 2000). By the end of 2002, there was limited evidence that Australian firms had started to look beyond 'easy wins', although there was some evidence of increased innovation in firms with certified EMSs (see further below).

The focus of most EMSs in Australia was on site-specific environmental



performance, in particular on issues such as regulatory compliance, resource conservation and pollution control (Brophy et al., 1995: 129; Sullivan and Wyndham, 2001: 26–8). That is, firms focused their efforts on those environmental issues that were of greatest importance to the firm as measured in terms such as financial impact, compliance status of the firm, corporate reputation and external expectations (Sullivan and Wyndham, 2001: 94–227, 230–31). This emphasis was supported by the various guidance documents on environmental reporting that had been prepared in Australia and which emphasized site or operational performance as the key area for public environmental reporting (see, for example, NSW EPA, 1997b; Snowy Mountains Engineering Corporation and Australian Industry Group, 2000). The site-specific focus of reporting meant that firms did not generally consider the upstream (that is, supplier performance) or downstream (for example, product use and disposal) impacts of their activities, with the consequence that the broader environmental impacts associated with their activities were not generally considered in decision-making. As a result, while the decisions made may have been optimal at the site level, they did not necessarily minimize overall life-cycle environmental impacts. This had started to change by 2001/2002, with some companies gradually starting to expand the scope of environmental management from site level operations to the entire product life-cycle. For example, as discussed in Chapter 6, a number of firms had started to work with suppliers to improve their suppliers' environmental performance.

### **Is environmental performance a relevant measure?**

It could be argued that a focus on the environmental outcomes achieved from EMSs is inappropriate, on the grounds that ISO14001 does not set performance standards, but is simply a tool to enable firms to improve their performance in line with the environmental goals specified in the firm's environmental policy (Stenzel, 2000: 284, 295; Gunningham and Sinclair, 1999b: 9–10; Krut and Gleckman, 1998: 8, 33–5, 40–62). That is, ISO14001 can be seen as a tool to assist firms to develop a systematic, preventive and holistic approach to environmental management through providing a framework for managing environmental risks (Stenzel, 2000: 295; Gouldson and Murphy, 1998: 22–3). As noted by one environmental manager interviewed in the course of this research:

ISO14001 is not a magic tool. It simply forces one to write down what is done, but does not require specific outcomes to be achieved.

Ultimately, the outcomes that are defined for environmental management are a firm-specific issue. That is, environmentally proactive firms will set

challenging targets for themselves, whereas others will adopt a more minimalist approach, aiming for compliance or somewhere beyond compliance. While benefits have been reported from EMS implementation, there is limited evidence that Australian firms are drastically changing their performance to significantly reduce their consumption of resources (energy, water, raw materials) or their emissions (Sullivan and Wyndham, 2001: 237). This does not, of itself, mean that ISO14001 does not influence business decision-making. ISO14001 can contribute to the definition of corporate goals, through specifying minimum requirements in terms of regulatory compliance, pollution prevention and continual improvement. In addition, by requiring senior management to review environmental performance and through the various data acquisition and recording processes, EMSs can enable environmental issues to be integrated into overall decision-making processes. These are all important and necessary parts of enabling firms to improve their environmental performance. In Australia, for example, it was common for senior managers not to consider environmental issues at all in their decision-making processes. The higher profile of environmental issues, in particular regulatory compliance issues, and the introduction of structured EMSs changed this. This was commented on by one environmental manager who said:

ISO14001 should not be seen as an end in itself but rather as a tool to aid in improving environmental performance. There is no doubt that a system complying with the Standard will lead to continuous improvement but the Standard by itself will not necessarily deliver superior environmental performance. That outcome will only be achieved with the support of top management, supported by an aware workforce that is given the necessary resources and support to achieve. However, by forcing our managers to at least consider environmental issues in their decisions, our EMS has helped remove a great barrier to improving our environmental performance.

### **Certification**

The certification of an EMS to a standard such as ISO14001 offers the potential to improve environmental performance through independent auditing of the EMS, thereby helping to identify areas of weakness in the management system or in the processes for managing environmental issues. The fact that the audit is independent also means that the identified issues are more likely to be treated seriously by a firm. Certification can also be a key performance indicator for environmental management efforts, through enabling firms to confirm the ongoing effectiveness of their EMSs.

Interviews with environmental and other managers in Australian firms indicated that a significant number of firms saw obtaining and retaining certification as the primary measure of success for their environmental management efforts. The implicit assumption was that, once an EMS had been

certified, it would continue to ensure that environmental outcomes were achieved. To an extent, this was a reasonable assumption, given that EMSs appear to have significantly improved regulatory compliance. However, because certification processes are, by definition, sampling exercises, certification does not guarantee that all of the organization's environmental aspects are being effectively managed, or that specific levels of environmental performance have been achieved for activities, products or services. Certification to ISO14001 is simply a third-party verification that the organization's EMS conforms to the requirements of ISO14001 and with the organization's policy and objectives and targets. A further issue is that, once certification is received, many organizations have tended to relax their efforts on environmental management, perceiving that the system is implemented and that there is nothing more to be done (Sullivan and Wyndham, 2001: 92; Pedersen and Nielsen, 2000; Gouldson and Murphy, 1998: 24).

For third parties, such as environmental NGOs, certification may not provide a meaningful measure of a firm's environmental performance. There are a number of dimensions to this. First of all, given that the certification process does not assess the meaningfulness of the environmental improvements made (for example, are the objectives and targets a real challenge or are they merely designed to continue business as usual approaches?), it is not possible to differentiate between 'good' and 'bad' performers solely on the basis of certification (Gunningham and Sinclair, 1999b: 18; Krut and Gleckman, 1998: 98–9; Switzer et al., 2000: 262–4). Second, the scope of certification is limited to the declared scopes, activities and locations. That is, it is only those parts of the firm that have been nominated for, and subject to, the certification process that can be certified. In practice, some Australian firms had part of their organization certified and then used this certification in their advertising and publicity material. The point that the certification did not apply to all aspects of the firm's operations was frequently not explicitly highlighted. Third, firms are not required to be in compliance with all legislation in order for certification to be granted. ISO14001 requires firms to have a policy commitment to compliance, to have identified legal requirements and, where these are considered significant, for objectives and targets to be defined to address these requirements. That is, firms can be out of compliance but still be certified, so long as the non-compliance has been identified and steps are in place to address it (Sullivan and Wyndham, 2001: 89–90). It could be argued that this is not necessarily a bad thing, as the fact that regulatory non-compliance has been identified and corrective mechanisms implemented could be taken as evidence of an effective environmental management system (that is, that appropriate self-corrective measures are place), but this perspective has been criticized on the grounds that such approaches undermine the credibility of EMSs (Krut and Gleckman, 1998: 95–7).

## **Economic Efficiency and Transaction Costs**

### **Data availability**

Somewhat surprisingly, even after some six years of ISO14001 in Australia, there were limited data available on the costs and benefits of EMS implementation. To an extent this paucity of data reflected the reluctance of firms to release potentially confidential information into the public domain. The lack of data also reflects the limitations in the data acquisition and analysis systems within Australian firms, and the difficulties in separating out environmental expenditures from other business expenditures. From interviews with firms, the establishment of EMSs had not substantially enhanced the acquisition of financial data relating to environmental initiatives, and most firms had not conducted a systematic analysis of the costs and benefits of their environmental management initiatives.

On EMS development and implementation, most firms had reasonable data on external costs such as consultants' fees and certification fees (as these data were generally captured by their financial systems). However, none of the firms interviewed for this research captured data such as the time requirements of employees and managers for system development, implementation and maintenance. The following quotes from environmental managers who had gone through the EMS development and implementation process illustrate this point:

The financial aspects of the corporate EMS have traditionally been absorbed within the operational benefits of affected branches, divisions and corporate areas. As a consequence, we are unable to place an accurate figure on the costs of implementation and subsequent system maintenance.

We see the environment as another cost of doing business. Separating costs out may make an interesting study but we have to look at our projects in totality, that is where all costs are considered in the decision-making process.

It's just part of my job. We all get paid salaries to do what is necessary to meet the organisation's aims. EMS certification is one of those things. It's up to me to make sure that we stay certified. Others, for example, our procedure custodians and those who are interviewed by the certifiers, also contribute. But we don't keep a record of our hours on the certification process.

### **EMS development, implementation and maintenance costs**

In 1998, the total cost of developing and implementing an EMS was estimated as being in the range of A\$50 000–250 000, including staff costs (Hammerschmid and Uliana, 1998: 57). These numbers are probably an overestimate as they reflected the early experience in Australia, where EMSs were treated as stand-alone management systems rather than being integrated with pre-existing management systems, practices and processes. Depending

on the specific industry and the complexity of the environmental issues that need to be managed, certification costs have been estimated as being in the range A\$5000–25 000 for the initial certification process and A\$3000–5000 per annum after that (Hammerschmid and Uliana, 1998: 57; see also the estimates of auditor time presented in JAS-ANZ, 2003: 34). These estimates exclude the staff time (for example, preparing for audits) and other costs associated with the certification process.

One way of examining these transaction costs is to compare ISO14001 with the requirements of an equivalent government programme. In the context of EMSs, a relevant comparison is between ISO14001 certification and the requirements of the European Union's Eco-Management and Auditing Scheme (EMAS) (European Community, 1993). The certification processes for the two schemes are broadly similar except that under EMAS firms are required to prepare a public environmental statement detailing how the firm has performed in meeting its stated objectives and targets (Honkasalo, 1998: 121). In some of the literature comparing ISO14001 with EMAS, it has been argued that ISO14001 is much weaker than EMAS because the EMAS requirements include compulsory validation, public reporting, legal proceedings, compliance and environmental performance assurance (Krut and Gleckman, 1998: 16–22; Gunningham and Sinclair, 1999b: 10). Apart from the issue of public reporting, these differences reflect the fact that EMAS is part of the administrative and regulatory structure of the European Union, whereas ISO14001 is simply a specification and not, of itself, part of a specific regulatory system. Therefore, care is required to ensure that 'like is compared with like'. Apart from the EMAS requirement for public reporting, the compatibility between the standards is such that if a firm has been certified to one of the standards it should also satisfy certification requirements for the other (Robinson and Clegg, 1998).

The private sector certification process means that governments do not need to establish their own certification processes and, therefore, certification can be seen as a transfer of administrative and compliance costs to the private sector. Furthermore, EMSs may allow governments to make more efficient use of their resources by focusing enforcement efforts on those companies that do not choose to adopt an EMS. For example, under the Victorian Environment Protection Act 1994, licensees who demonstrate an ability and commitment to environmental management (which includes the implementation of an EMS) can be accredited, with the benefits of an accredited licence including simplified licensing requirements, a reduction in licence fees and simplified approval requirements for most new works (A'Hearn, 1996; OECD, 2000: 35–6; Gunningham and Sinclair, 2002: 157–88). Under the accredited licensee scheme, applicants are required to have a formal environmental management system, audit programmes and environmental improvement programmes.

**Costs and benefits of EMSs**

In the interviews conducted for this research, in particular with environmental managers, there was general agreement that well-designed EMSs can provide business benefits through enabling more strategic and structured decisions to be made. For example, the environmental manager of a construction company said:

Our EMS has enabled us to not only better understand the environmental requirements that are an integral part of all of the jobs that we tender for but also to demonstrate that we are able to meet these requirements.

A number of interviewees argued that the business costs associated with the environment (for example, compliance costs, pollution controls, liability management) were so significant for their business that a formal management system was, in fact, a necessary cost associated with running the business. Some of the interviewees noted that, while they had not done formal cost–benefit assessments, they were of the view that the administrative and compliance costs associated with their EMS were outweighed by business benefits such as marketing/PR, access to new markets, meeting the requirements of customers, reduced regulatory compliance costs, savings on insurance and enhanced relationships with financial institutions, regulators and other stakeholders (see also Sullivan and Wyndham, 2001: 90–91). While there are limited data to support these views, it is pertinent to note that an assessment of the economic effects of the European Union’s Eco-Management and Auditing Scheme (EMAS) in Germany found that the costs of developing and implementing a system to meet the requirements of EMAS were US\$100 000 on average. Of the firms that developed and implemented such systems, one-third reported that they had reduced their costs by up to US\$80 000 per year and one-third had reduced their costs by up to US\$320 000 per year (a further one-third of participating organizations did not provide data) (Schaltegger and Burritt, 2000: 377).

**Costs and benefits of environmental projects**

An alternative approach to the assessment of economic efficiency is to look at the costs and benefits of the decisions (for example, environmental expenditures) that are made as a consequence of the implementation of an EMS. As noted above, most Australian firms treated regulatory compliance as ‘a cost of doing business’ and tended not to subject such investments to cost–benefit assessments (other than lowest cost assessments). While, at least in some cases, the process of implementing EMSs has led to firms incurring costs to ensure regulatory compliance (for example, in situations where they had not previously complied with regulation), it could be argued that these costs

should have been incurred anyway and that they should not be seen as part of the costs associated with establishing an EMS.

Apart from regulatory compliance initiatives, the majority of environmental management initiatives adopted were 'no regrets' measures where there were clear financial benefits to the firm. From interviews with environmental managers, the expected rates of return on environmental or energy investments were typically 50 per cent. That is, the initial capital investment had to be paid back within two years (van Berkel, 2000; Environment Australia, 1998). Even after six years' experience with EMSs, there was limited evidence that firms had altered the investment hurdles for environmental or energy-related projects. From interviews with environmental managers, the one clear contribution of EMSs was to make environmental issues an explicit part of their firms' decision-making processes. That is, while the investment hurdles had not altered, the placing of environmental issues on the business decision-making agenda had enabled firms to identify financial opportunities associated with environmental initiatives.

### **Competitiveness**

At the domestic level, given the absence of mandatory requirements for EMS certification, the decision on whether or not to implement an EMS was a decision for each firm to make for itself by trading off the financial benefits and costs of developing and implementing an EMS. For the majority of firms (possibly with the exception of very small firms as discussed further below) the costs associated with obtaining and maintaining certification were seen as relatively low compared to other business costs.

The international competitiveness implications of EMS certification are less clear. When it was first issued, it was suggested that firms would be required to be certified to ISO14001 before gaining access to certain markets (Robinson and Clegg, 1998: 7; Honkasalo, 1998: 120; Gunningham and Sinclair, 1999b: 12). While this had not eventuated by the end of 2002, there had been ongoing discussions about the potential integration of ISO14001 into international trade rules (Altham and Guerin, 1999: 62; Stenzel, 2000: 289–90; Krut and Gleckman, 1998: 63–74). Some of the environmental managers interviewed for this research expressed concern about the potential variation in certification requirements in different countries, suggesting that it may be easier to obtain certification in some countries than in others. Those interviewed noted that the issue was less the costs of certification (which are relatively minor) than the costs associated with delivering on the potentially expensive environmental performance improvements implied by the continuous improvement requirements of ISO14001. The interviewees argued that the robustness of the Australian certification process (for example,



the systems in place to ensure the skills and experience of auditors) enhanced the credibility of the certification process but that this strength could potentially put Australian firms at a disadvantage relative to their international competitors. While the national accreditation bodies do work together to ensure that accreditation and certification requirements are consistent between countries, these do not necessarily address the manner in which auditing is carried out in practice, the degree of scrutiny that firms are subjected to or the manner in which non-conformances are addressed. This appears to have been the case in ISO9000 (for quality management systems) where some organizations with 'paper systems' that met the requirements of the relevant standard were granted certification, even though the system was not implemented in practice (see, for example, the views expressed in Krut and Gleckman, 1998: 76; Stenzel, 2000: 286; Utting, 2002). It is interesting to note that the UK Accreditation Service was recently promoted to revamp its processes for accrediting EMS certification bodies following public concerns about the robustness of its oversight processes (ENDS, 2004).

### **Soft Effects**

ISO14001 offers the potential for promoting change in corporate environmental cultures (for example, through enabling better performance, encouraging the integration of environmental performance into corporate decision-making) (Gunningham and Sinclair, 1999b: 9). By 2002, there were some signs that more proactive approaches to environmental management were being adopted, through firms learning from their experience with environmental management and integrating this into their decision-making processes. However, there was limited evidence that EMSs had led to Australian firms adopting more holistic approaches to environmental management, probably reflecting, at least in part, the emphasis on regulatory compliance. As noted by two of the environmental managers interviewed for this research:

Having an EMS has been great for us as an organisation as it has meant we have improved our performance, in particular through a systematic approach to identifying our environmental issues and through getting into compliance. With hindsight, I think that we were too focussed on compliance. What happened was that we saw each compliance issue, and there were a few, as an isolated problem to be solved, whereas if we had taken a more holistic approach and a bit more time we could have identified better environmental solutions at lower cost. One example was where we installed a chemical dosing system to meet the conditions of our trade waste agreement. With hindsight, I suspect we could have eliminated the waste stream completely by separating the lines and rerouting the wastes back into the process.



On each new project, we now explicitly look at environmental issues. We've found that the waste avoidance and waste minimisation philosophies of environmental management have given us new tools to look at environmental problems.

While an environmental policy is only a starting point for addressing environmental issues within an organization, it has been argued that the absence of an environmental policy suggests that the environment is not a priority issue for the organization (Henriques and Sadorsky, 1999: 89). In many Australian firms, the lack of senior management commitment to environmental management was, at least historically, a common cause of failure of environmental initiatives as, without active support, middle managers and employees received the impression that environmental issues were of relatively low importance to the organization. While the active commitment of senior management cannot guarantee that environmental issues will be properly managed, the absence of such commitment will doom environmental management efforts to failure or only partial success (DeSimone and Popoff, 1998). In Australian firms with EMSs, there is evidence that the requirement to establish an environmental policy and to identify environmental aspects and impacts and legal requirements led to capacity being built within these firms, changing decision-making processes to explicitly include environmental issues and even changing organizational cultures (see, generally, Sullivan and Wyndham, 2001: 94–227). The influence is somewhat circular as it has been argued that one of the key factors driving Australian business interest in the environment has been the availability of more and better environment information resulting from the development and implementation of EMSs (Schaltegger and Burritt, 2000: 30–57). These changes are being reflected in the manner in which individuals within firms see their responsibilities:

We know that we are all responsible for environmental performance. (Project Manager, construction company)

The register of environmental aspects and impacts and the electronic database of legal requirements have meant that we have been able to formalise responsibilities for regulatory compliance. (Legal and Compliance Manager, engineering contracting company)

All of our employees went through a two hour environmental awareness programme and all new employees have the environment as a specific issue in their induction training. We also include the environment in meetings, from the ten minute toolbox meeting to our senior management review meetings. This training and high profile for the environment has provided a lot of benefits. For example, we encourage our employees to come up with new ideas for improvements. It also means that our employees see us as an environmentally responsible company. (Quality Manager, mining company).

## **Innovation**

There is some evidence that ISO14001 has contributed to more innovative approaches to environmental management. For example, a study of 26 firms in Western Australia (12 of whom were certified to ISO14001 and 14 of whom were not) indicated that the certified firms had implemented approximately 1.5 times as many new technologies (for example, energy conservation, water conservation, waste reduction technology) as non-certified firms (Marinova and Altham, 2000). Care is required in extrapolating these data to all firms with certified EMSs, as only a limited number of firms were considered in the study. However, the certified firms did appear to see environmental improvements in a much more holistic manner than those firms that had not been certified and saw that certification (and the actions resulting from their EMSs) provided broader business and competitive advantages.

One of the reasons for the apparent lack of innovation in Australian firms with certified EMSs is the absence of performance requirements in ISO14001. That is, the fact of having an EMS does not necessarily provide a driver for change in environmental performance, as objectives and targets are set by the firms themselves. By the end of 2002, there was limited evidence that firms with certified EMSs were setting strong (or 'stretch') targets for themselves, with the result that the internal drivers for innovation were generally not present within these firms. There was some evidence that the ISO14001 requirements for checking and corrective action were providing companies with a framework for the self-examination and self-correction of environmentally harmful practices or conditions. For example, as noted by the environmental manager for an electricity utility:

The auditing and corrective action procedures of our EMS have proven to be an effective and highly proactive mechanism to encourage staff to identify deficiencies and potential improvements in our operations. This has delivered significant bottom line benefits through efficiency gains and performance improvements.

## **Acceptability**

### **Business perspectives**

Australian industry has consistently argued that EMSs can enable firms to substantially improve their environmental performance, demonstrate their social responsibility, move towards sustainability and provide flexibility in responding to environmental issues (Altham and Guerin, 1999: 61, 66–7; Gunningham and Sinclair, 1999b: 8). Despite the rhetoric, the relatively low number of Australian firms (approximately 600 at the beginning of 2004) that have been certified to ISO14001 indicates that the advantages of certification are not unambiguous. There are a number of reasons why the uptake of

certification has been so low. The first, and perhaps most important, is that certification is not a requirement for winning government contracts. There is a general reluctance among firms to argue for such a requirement following the Australian experience with quality management systems. At the end of 1995, almost 9000 Australian companies had been certified to ISO9000. In many cases the main reason for certification was to meet government purchasing requirements. The problem was that many firms simply implemented a system that would get them certification, without necessarily considering the organizational implications of such an approach (in terms of inefficiencies, inappropriate coverage, lack of staff support, excessive documentation and so on). In 1996, the Australian government decided that companies would no longer be required to conform to ISO9000 to secure government contracts (Sullivan and Wyndham, 2001: 91–3). Second, strong customer pressures are yet to emerge (Gunningham and Sinclair, 2002: 25–6). While some multinational enterprises have started to demand ISO14001 certification (for example, Ford has advised all of its suppliers that they will need to be certified to ISO14001 as a precondition for being a supplier to Ford (*Environmental Engineer*, 2001)), it is far from clear that this will become a more general trend. Third, Australian industry sees that there is a general lack of public recognition for the efforts of firms with certified EMSs (Gunningham and Sinclair, 1999b: 15). Fourth, concern has been expressed that there is a lack of consistency between the requirements of ISO14001 and other government requirements and industry programmes (see, for example, Photinos and McKim, 2001), with the consequence that firms that have signed up to other programmes have been reluctant to go through the ISO14001 certification process as well. Despite these concerns, ISO14001 is increasingly referred to in other programmes (for example, the Greenhouse Challenge and the Minerals Industry's Code for Environmental Management) as providing the framework or model for an EMS. Therefore, this problem of multiple standards may decline over time. While none of these problems are insurmountable, they have led to industry opinion being divided on the benefits of ISO14001 and of ISO14001 certification. The following comments by one environmental manager reflect the views of many of those interviewed for this research:

Tailoring our management system to be aligned with ISO14001 has been worthwhile and has added value. However, the ISO14001 Standard is seen very much as a tool rather than an end in itself.

### **Government perspectives**

Australian government agencies have broadly welcomed and encouraged the development of EMSs as the improved rates of compliance and improved environmental performance that appear to be associated with the

implementation of such systems can enable government agencies to focus their attention on more serious polluters (Gunningham and Sinclair, 1999b: 8, 17; Bell, 1997: 69). The certification process may also mean that governments do not need to establish their own processes for the certification of EMSs. Both Victoria (the Accredited Licensing initiative) and Western Australia (Best Practice Licensing Scheme) have incorporated a commitment to EMSs as a central component of their licensing programmes, with accredited facilities being provided with benefits such as reduced fees, licence bubbles (that is, where total emissions from the facility must remain within a specified limit but the operator is granted significant flexibility in terms of how this goal is to be achieved) and exemptions from certain regulatory monitoring and inspection processes (Gunningham and Sinclair, 1999b: 18). Despite these benefits, the rate of uptake of accredited licences has been very slow, probably reflecting the realities that regulatory requirements are not so onerous or so complex as to require firms to implement an EMS, and that the benefits of regulatory relief do not outweigh the costs of implementing an EMS (Gunningham and Sinclair, 1999b: 18; Gunningham and Sinclair, 2002: 184–7).

### **NGO perspectives**

Environmental groups have been critical of EMSs for a number of reasons. The first is that EMSs are voluntary and, for at least some groups, there is a preference for a tool that is part of the regulatory framework. This issue is compounded by the absence of requirements for public reporting in ISO14001 (Honkasalo, 1998: 121; Stenzel, 2000: 284; Barber, 1998: 21).

The second reason is that the focus of the certification process is on the conformance of systems of environmental management with ISO14001, rather than on the specific outcomes that are achieved from environmental management processes. That is, it is not possible to differentiate between good and bad performers solely on the basis of certification and there is no guarantee that firms with certified EMSs will have a better environmental performance than other firms. This concern is compounded by the fact that the certification process is a private sector arrangement where the certifiers are paid by their clients, which may lead to capture or more lenient auditing.

The third reason is that there is general scepticism regarding the purpose of ISO14001, as the corporate agenda is perceived as aiming to replace mandatory national standards with voluntary standards (that is, the corporate agenda has been portrayed as deregulatory rather than complementary to legislation) (Stenzel, 2000: 257–8, 285). There is also concern that companies may use the fact that they have certified EMSs in place to develop enhanced relations with regulators, which may also enable them to influence the behaviour of regulators or to influence the regulatory process (Stenzel, 2000: 268, 281; Gouldson and Murphy, 1998: 23; Barber, 1998: 21).

Finally, NGOs are concerned that the emphasis of ISO14001 on the standardization of processes and activities may actually act as a barrier to the necessary radical changes that are required to achieve sustainability (Rikhardsson and Welford, 1997: 51–6). This argument has an element of truth and also an element of inaccuracy. On the one hand, EMSs can be seen as a tool for achieving defined outcomes. That is, their role is to enable corporate goals and objectives to be achieved, where the objectives are informed or determined by external pressures (for example, regulation, consumer demand) and internal drivers (for example, corporate ethics). Therefore, it could be argued that criticisms about the limited outcomes from EMS should actually be aimed at the regulatory and policy framework rather than at the EMSs themselves. On the other hand is the view that EMSs, through their success in enabling firms to demonstrate their ability to self-regulate, have actually acted as a barrier to the stronger regulatory and policy changes necessary to achieve sustainability. The representative of one environmental group interviewed for this research argued that:

The problem is not ISO14001 itself – it is just a management tool and the evidence is that it does help organisations manage their environmental issues. The problem is that ISO14001 and ISO14001 certification are being used to argue against the more fundamental changes that are needed for us to move towards sustainability. Of course regulatory compliance and finding easy wins are key parts of organisations' performance. But these must be seen as just the starting point not as the endpoint or the upper limit of performance.

### **Inclusiveness and Public Participation**

ISO14001 is a unilateral commitment made by participating firms, where conformance is assessed by certification bodies. NGOs do not have a role to play in the implementation of ISO14001 at the level of the individual firm. For example, ISO14001 does not require firms to engage with NGOs or other parties when defining objectives and targets. In situations where firms have engaged with NGOs on environmental issues, this engagement has been driven by factors other than ISO14001 (for example, community concerns about specific issues).

While ISO14001 does not require or envisage that firms will allow the public to participate in decision-making, many of the NGO criticisms of ISO14001 relate specifically to the question of participation and inclusiveness. NGOs have argued that the potential for regulatory capture and the fact that it is not possible to differentiate between good and bad performers solely on the basis of certification represent important limitations in the manner in which firms define environmental priorities for themselves. In the absence of statutory requirements for firms to consult with stakeholders, NGOs have

suggested that ISO14001 should include requirements for firms to have open and transparent consultation processes with proper public participation on issues such as corporate environmental policy, environmental objectives and targets, and environmental performance monitoring.

## **Law and Public Policy Issues**

### **Should EMSs be mandatory?**

One of the specific issues that has been raised in Australia is whether EMSs should be mandatory. The broad arguments in favour of mandatory EMSs are that they offer the potential for improved corporate performance in relation to regulatory compliance and that they ensure that there are processes and systems in place for firms to manage their environmental issues. However, the creation of mandatory requirements may lead to firms emphasizing compliance with the law, rather than using EMSs as a tool for business improvement or for achieving better business outcomes (Sullivan, 2001: 602). Assessments of mandatory requirements for management systems have been mixed, with some reporting improvements and others deteriorations in performance (Sullivan, 2000; Gunningham, 1999: 204). The reasons for these different results are unclear as some improvements appear to be as a result of data suppression, and some deteriorations actually reflect improved data capture and analysis (Gunningham, 1999).

Furthermore, it is doubtful that EMSs lend themselves to blanket adoption as each firm is unique (with different aspects and impacts, management structures, levels of skill, expertise and resources and corporate cultures) and the approach adopted for environmental management will be defined by these factors (Sullivan and Wyndham, 2001: 229–30), although it may be that the increasing use of ISO14001 allows regulatory requirements to be aligned with its systems and structures. That is, it may be possible to develop a regulatory framework around broadly agreed management structures, although even this type of approach may lead to overly restrictive constraints on organizational structures. As a consequence, it is generally agreed that regulations should avoid prescribing exact forms of management for firms (Rehbinder, 1995: 265; Gunningham, 1999: 212–13; Sullivan, 2001: 602).

A further issue with making EMSs a mandatory requirement is that there are no minimum performance standards specified in ISO14001. Therefore, EMSs should only form one part of overall regulatory strategies, which could also include measurable improvements in environmental performance, independent third-party oversight, public participation and public reporting and government oversight underpinned by credible sanctions (Gouldson and Murphy, 1998: 94–5; Gunningham and Sinclair: 2002: 113). In this context, it may be that the best approach is to specify the environmental outcomes that

are required and to then allow firms the freedom to achieve these outcomes in the most appropriate manner.

Finally, unlike large firms, many small and medium-sized enterprises (SMEs) do not have the capacity or interest to go beyond compliance, as the costs of developing and implementing such systems may be prohibitive. For example, it has been suggested that the costs of ISO14001 certification for a firm with A\$500 000 turnover would be of the order of 1.7 per cent of sales, outside of the other costs associated with system development and implementation (Gunningham and Sinclair, 2002: 21). In addition, EMSs may not be appropriate to the issues that need to be managed. In practice, the majority of SMEs tend to prefer defined requirements (for example, the use of specific technologies) rather than flexible approaches. Even though it has been argued that many firms could do much more if encouraged to go beyond compliance (see, for example, Ammenberg et al., 2000), the reality is that the majority of SMEs will continue to prefer compliance-oriented approaches (that is, specific rules) rather than regulatory flexibility (Altham and Guerin, 1999: 67; Sullivan, 2001: 602–3; Gunningham, 1999: 198).

### **Do EMSs allow firms to demonstrate due diligence?**

Due diligence has been an important driver for Australian companies in developing and implementing EMSs. This section, therefore, reviews the question of whether or not the implementation of an EMS would allow the demonstration of due diligence by corporate directors and managers.

While there is a significant inconsistency between the due diligence provisions that have been adopted in the different states (for a useful overview see Howard, 2000), the decision in *R v Bata Industries*<sup>4</sup> in Canada is widely cited as the most comprehensive judicial definition (see, further, Lipman and Bates, 2002: 190–211 for a comprehensive review). In the decision, a number of factors were specified that could be used to evaluate the merits of an individual director's reliance on the due diligence defence. These were (a) whether the director established a pollution prevention system or ensured that such a system was in place, (b) whether the pollution prevention system complied with industry norms, (c) whether the director ensured that corporate officers reported on the performance of the system to the board, and that any non-compliances were reported in a timely manner, (d) whether the director was personally familiar with industry norms, and (e) whether the director immediately and personally reacted on becoming aware that the system has failed.

Establishing an environmental management system in accordance with ISO14001 is likely to be considered to be an adequate demonstration of the requirement to establish a pollution prevention system, in particular if the management review, monitoring, non-conformance, corrective action and



auditing elements are fully implemented (thereby enabling supervision of the system to be demonstrated). For an organization to provide objective evidence of its commitment to due diligence, policy commitments to regulatory compliance would need to be reflected in the objectives and targets adopted, the actions taken to ensure compliance, the actions taken to monitor and review compliance and a management review process which is focused on the requirements of due diligence and legislative compliance. Systems should be in place to ensure that corporate officers report on the performance of the system to the management and board of the organization. While ISO14001 requires that the performance of the system is monitored and the performance reported to management for review, no specific requirements are detailed. To meet the requirements of due diligence, such reporting should be regular and frequent and should detail not only the performance of the system but also the environmental performance of the organization. This reporting should include an assessment of compliance with legislation, a description of the measures to verify compliance with legislation, a description of the measures adopted to reduce or eliminate risks, and details of the changes in regulatory or other requirements which would affect the manner in which the organization operates.

However, simply having these systems and processes in place is unlikely to be enough and managers and directors need to assume responsibility for the supervision (or oversight) of the management system and to take a personal interest in the activities under supervision. This requirement for supervision is recognized by ISO14001 which asks that specific management responsibilities and authorities be defined to ensure that the system is established and maintained and the performance of the system reported to management. ISO14001 does not explicitly discuss the need for individual managers to take personal responsibility for the management of environmental issues, other than general requirements to conduct management reviews.

The assessment of compliance with industry norms can be separated into compliance with management and technical norms. With the adoption of ISO14001 as an Australian Standard, it is likely that, even though Australian Standards do not generally have a standing in law, this standard would be referred to as part of the assessment of the adequacy of a particular management system. Therefore, the current industry norm for environmental management is likely to be interpreted as compliance with the requirements of ISO14001. The certification of an EMS to ISO14001 provides independent confirmation that the management system complies with the standard. However, the primary focus of the certification process is on the performance of the system against the requirements of ISO14001 and the certification process is not a risk identification process (although the process may help in identifying issues to be managed). The second part of complying with industry



norms concerns the actual physical and operational controls in place. The case of *EPA v Ampol Ltd*<sup>5</sup> highlighted the fact that ensuring compliance with legislative requirements may not be sufficient to demonstrate due diligence and that it is necessary to focus on the actual risks posed by activities. Ampol was the owner and lessor of a fuel depot containing underground tanks used for the storage of petroleum products. While filling one of the tanks, an employee of the lessee of the depot allowed the underground tank to overflow into the stormwater system, leading to pollution of a nearby creek. It was alleged that Ampol, as the owner of the land, had been negligent in not providing suitable emergency systems to ensure that such a spillage would be contained, even though the spill control system was in compliance with all regulatory requirements at that time. In the Land and Environment Court, it was noted that the purpose of the Environmental Offences and Penalties Act (the Act under which the prosecution was brought) was to oblige all persons to avoid or minimize harm and, given that the site held products which were potentially harmful to the environment, it was held that it was necessary to contain any spill which may occur and which had the potential to cause environmental harm. Therefore, as Ampol had failed to take steps to contain such a spill and serious environmental harm ensued, Ampol was held to have fallen below the expected standard of conduct. The company's submission that its compliance with industry codes, standards and practices was relevant to the issue of negligence was rejected (Lipman and Bates, 2002: 205). The consequence of this decision is that the management system implemented needs to have a focus above and beyond legislative compliance. This requires that organizations consider not only routine emissions and routine activities, but also the effects of non-routine and accident situations. While ISO14001 requires that consideration be given to accidental events in the development and implementation of an EMS, it does not specify the measures to be taken to prevent or respond to such events.

The decision in *R v Bata Industries Ltd* also noted that directors and manager should be personally familiar with industry norms, implying that the directors and managers need to keep up to date with developments in management control and pollution and risk control across their industry. These developments would include legislative developments, industry norms, standards and codes of practice.

Finally, to demonstrate due diligence in the event of an incident, it is necessary to assess whether the relevant individuals (managers and directors) reacted immediately and personally on becoming aware that the system had failed. The EMS standards do contain provisions for the management review of system performance but, as discussed in *R v Bata Industries Ltd*, it is not sufficient merely to review the performance of the system but actions must also be taken to address deficiencies in the system. Therefore, for these

individuals, it would be necessary to ensure that they promptly implemented the advice received regarding the performance of the system, including any weaknesses or failings of the system. The standard also includes requirements for emergency preparedness and response but does not have any explicit requirements for directors or managers to personally respond in the event of such incidents.

In conclusion, due diligence can be defined as the taking of all reasonable steps to prevent all foreseeable environmental harm and the implementation and maintenance of a suitable system of management to ensure ongoing compliance with regulations. For individuals involved in the management of an organization, personal commitment and support for the management system are required as is the taking of personal responsibility for the management of environmental risks. While ISO14001 provides a model framework for effective environmental management, the demonstration of due diligence requires that individuals concerned in the management of organizations adopt a much greater personal role than just the establishment and maintenance of an environmental management system. From the arguments presented above, it is clear that a defence of due diligence will ultimately depend on the degree of personal commitment of the directors and managers to the issue of environmental protection.

## CONCLUSIONS

EMSs appear to have provided significant benefits to many Australian firms, through enabling them to assure regulatory compliance, to achieve cost-effective environmental improvements and to integrate environmental issues more fully into business decision-making processes. These outcomes have represented significant improvements for many firms. It is, however, a point of debate whether these outcomes are a consequence of the implementation of EMSs or whether they should, in fact, be attributed to the regulatory changes that have made environmental management a business priority. The evaluation of performance is hampered by weaknesses in firms' information collection systems. Thus, while EMSs do appear to have provided a range of environmental and economic benefits, the data to confirm these performance improvements are limited.

ISO14001 has become the *de facto* framework for environmental management systems in Australia, although the demand for certification remains muted. It appears that the greatest value of EMSs is their perceived ability to assure regulatory compliance. While continual improvement is one of the underpinning principles of EMSs, there is limited evidence that firms see this as a strong requirement or as a principle that should override other

factors that influence business decision-making processes. That is, regulation seems likely to have the key role to play in defining how far firms move towards the goals of sustainability.

## NOTES

1. Useful overviews of the development of ISO14001 are provided in Krut and Gleckman (1998: 8–10) and Murray (1999: 40–49).
2. A list of the Australian organizations certified to ISO14001 is available at [www.jas-anz.com.au](http://www.jas-anz.com.au) (last visited 15 January 2004).
3. A list of the accredited certification bodies in Australia and New Zealand can be found at [www.jas-anz.com.au](http://www.jas-anz.com.au) (last visited 15 January 2004).
4. *R v Bata Industries Ltd* (No 2) (1992) 70 CCC (3rd) 394.
5. *EPA v Ampol Ltd* (1993) 81 LGERA 433; *EPA v Ampol Ltd* (1994) 82 LGERA 247.

## 6. The Australian Greenhouse Challenge

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### GREENHOUSE SCIENCE, POLITICS AND POLICY

#### **Climate change science**

The greenhouse effect is a phenomenon whereby naturally occurring gases (including carbon dioxide and water vapour) in the earth's atmosphere trap heat that would otherwise escape into space. Without the greenhouse effect, the earth would be, on average, some 33°C colder than it is today. Human activities lead to the emission of a range of greenhouse gases to the atmosphere, most significantly carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulphur hexafluoride (SF<sub>6</sub>) chlorofluorocarbons (CFCs) and perfluorocarbons (PFCs). The major source of carbon dioxide is the burning of fossil fuels (coal, oil, natural gas), while methane is produced from the digestive processes of cattle, rice cultivation, natural gas venting and waste decomposition in landfills. Nitrous oxide is produced primarily from vegetation burning, industrial emissions and the effects of agriculture on soil processes. The different greenhouse gases have different potentials to enhance the ability of the earth's atmosphere to trap heat. In most policy discussions, greenhouse gas emissions are expressed in terms of the equivalent quantity of CO<sub>2</sub> that would need to be emitted to cause the same amount of global warming. Global Warming Potentials (GWPs) are used to describe the potential of different gases to contribute to global warming, expressed relative to that of carbon dioxide (CO<sub>2</sub>). The GWPs of the major greenhouse gases are 21 for methane, 310 for nitrous oxide, 23 900 for sulphur hexafluoride, 140–11 700 for hydrofluorocarbons and 6500–9200 for perfluorocarbons. As greenhouse gases have different lifetimes in the atmosphere and their GWPs differ depending on the specific time horizon that is of concern, a 100 year time horizon is generally taken as the standard period (Houghton et al., 2001).

It is estimated that present-day atmospheric concentrations of greenhouse gases are about 30 per cent higher than in pre-industrial times and are increasing by about 0.4 per cent per year. For example, the present concentration of carbon dioxide in the atmosphere is approximately 370 parts per million, compared to an average level of 330 parts per million in the early 1970s and a reasonably constant average of 280 parts per million in the 1000 years before the industrial revolution (Pearman, 2001: 32–3). The increased concentrations of these greenhouse gases alter radiative balances and tend to

warm the atmosphere, thereby creating the prospect of global climate change. 'Climate change' (or the 'enhanced greenhouse effect') is defined as a change of climate, attributable either directly or indirectly to human activity, that alters the composition of the global atmosphere and which is additional to natural climate variability over comparable time periods.<sup>1</sup> It is estimated that a warming of about 0.6°C has occurred since the late 1800s (Pearman, 2001: 32–3).

Carbon dioxide is estimated to contribute about 70 per cent of the enhanced greenhouse effect, with methane contributing a further 20 per cent. Human activities also release sulphate particles (or 'aerosols'). In some locations, the cooling effect of these aerosols may be large enough to offset the warming due to greenhouse gas emissions. However, aerosols do not remain long in the atmosphere and, therefore, are unlikely to offset the long-term effects of greenhouse gases (Watson et al., 1998: 3).

Based on the likely changes in emissions of greenhouse gases, climate models predict that mean annual global surface temperatures will increase by between 1.4 and 5.8°C by 2100, global mean sea levels will rise by between 15 and 95 cm and the spatial and temporal patterns of precipitation will change significantly (Watson et al., 1998: 3). The average rate of warming associated with the enhanced greenhouse effect is expected to be greater than at any stage in the past 10 000 years. While there are significant uncertainties regarding the magnitude of the predicted temperature rise, the Intergovernmental Panel on Climate Change (IPCC) has concluded that observations of the world's climate show convincingly that the climate is changing (Houghton et al., 2001)

Human health, ecological systems and agriculture are all sensitive to changes in climate, either as a direct consequence of climate change (for example, floods, thermal stress) or as a result of indirect effects associated with it (for example, the spread of diseases, ecosystem failure, malaria) (McCarthy et al., 2001). Climate change is likely to represent an additional stress on these systems already affected by increasing resource demands, unsustainable management practices and pollution, potentially reducing the ability of some environmental systems to provide key goods and services such as adequate food, clean air, clean water, energy, safe shelter and low levels of disease.

### **The economic implications of global warming**

The IPCC has estimated that the costs associated with the impacts of global climate change will be of the order of 2 per cent of world gross domestic product (GDP), although there are significant uncertainties associated with these estimates (Metz et al., 2001). The burning of coal, oil and natural gas and the clearing and burning of vegetation are the main contributors to the

enhanced greenhouse effect. Efforts to control these emissions have potentially enormous implications for industrial, agricultural, energy and transport policies and practices.

Greenhouse gases are extremely long lived, and their concentration in the atmosphere is determined by emissions of greenhouse gases in the preceding 300 years or so. Therefore, to stabilize atmospheric greenhouse gas concentrations would require that global emissions are much less than they are now. While specific targets have not been defined, a stabilization target of 550 parts per million by volume of carbon dioxide in the atmosphere (that is, a doubling of the pre-industrial level) is a widely used benchmark (Janssen and De Vries, 2000: 1). The IPCC has estimated that achieving this target would require an overall reduction in greenhouse gas emissions of 60 per cent (Houghton et al., 2001: 69–124). It has been suggested that to allow for economic growth and development in the less developed countries the developed countries should reduce their emissions of greenhouse gases to about 20 per cent of present emission levels (Lowe, 1998).

It has been predicted that temperatures in Australia will rise by between 1° and 2°C by 2030 and between 1° and 6°C by 2070, with significant changes in patterns of rainfall (Commonwealth of Australia, 2002: 19). Australia's relatively low latitude makes it particularly vulnerable to impacts on its scarce water resources. Agriculture, coastal ecosystems, forestry, infrastructure, human health, tourism, biodiversity and the insurance industry could all be significantly affected. It has been estimated that the overall impacts on Australian GDP could be substantial, possibly of the order of several per cent per annum, based on a doubling of atmospheric concentrations of CO<sub>2</sub> (Parliament of the Commonwealth of Australia, 2000: 33).

### **The international policy context**

The first report of the IPCC (Houghton et al., 1990), released in 1990, provided the major catalyst for international policy development on climate change. The United Nations Framework Convention on Climate Change (UNFCCC) was signed by 154 countries at the Rio Summit in June 1992 and has, subsequently, formed the centrepiece of international efforts to address climate change. The parties to the UNFCCC, in Articles 2 and 4, committed themselves to stabilizing greenhouse gas emissions at a level that would prevent 'dangerous anthropogenic interference with the climate system', through limiting emissions, enhancing sinks and protecting reservoirs. The countries listed in Annex 1 to the UNFCCC (the 'developed' countries) agreed to work towards stabilizing their greenhouse gas emissions at 1990 levels and to demonstrate a reversal in the trend towards growing emissions before 2000. However, the UNFCCC is a framework agreement that requires supplementary protocols and agreements for implementation.

The Conference of the Parties (COP) is the governing body of the UNFCCC and meets annually to address UNFCCC issues. The third Conference of the Parties (COP-3) at Kyoto marked a significant step forward in the UNFCCC process, with the signing of the Kyoto Protocol.<sup>2</sup> The parties to the protocol are required to (a) formulate cost-effective national and regional programmes to improve emission factors, data and models, (b) formulate, implement and update national and, where applicable, regional programmes to mitigate climate change and facilitate adequate adaptation to climate change, and (c) cooperate in the development, diffusion and application of environmentally sound technologies, know-how, practices and processes pertinent to climate change. Under Article 3 of the Kyoto Protocol, the Annex I countries to the UNFCCC agreed to greenhouse gas emission targets (amounting to an average reduction of 5.2 per cent from a base year of 1990) to be met by the years 2008–12. The protocol applies to six greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, SF<sub>6</sub>, CFCs and PFCs). The Kyoto Protocol permits the use of ‘flexible mechanisms’ (Joint Implementation (JI), the Clean Development Mechanism (CDM) and emissions trading) to enable countries to achieve their targets. JI allows the Annex I countries to the UNFCCC to trade emission reduction units among themselves, either through the removal of sources or the addition or enhancement of sinks, beyond that which would have otherwise occurred. Articles 1(8) and 1(9) of the UNFCCC define a greenhouse sink as any process, activity or mechanism that removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere, while a source is any process or activity that releases a greenhouse gas, aerosol or a precursor of a greenhouse gas into the atmosphere (for a more detailed description see Australian Greenhouse Office, AGO, 1999b: 12–21). The CDM allows Annex I countries to obtain greenhouse gas credits for sponsoring greenhouse gas emission offset projects or other technology transfer in a developing country. However, the rules regarding JI, CDM and the treatment of carbon sinks were not agreed at COP-3 and the participating countries agreed that these would be developed at later COPs.

The other key debates at COP-3 were the role of developing countries in limiting greenhouse gas emissions, and the use of forests as sinks to offset the emissions from fossil fuels (Cameron, 2000: 9–11; Barrett, 1998: 21–3; Hill, 2000a). Since 1991, developing countries have accounted for more than 50 per cent of global greenhouse gas emissions and it appears likely that the growth in their greenhouse gas emissions will swamp the emission reductions that result from actions taken by the countries covered by the Kyoto Protocol (Gelbspan, 1998: 112–14). The allocation of responsibility is contentious as it depends on the specific greenhouse gases that are considered, the measure of output (for example, total, per capita), current levels of greenhouse gas emissions, historical contribution to greenhouse gas emissions and projected

future emissions. To illustrate the point, if emissions are calculated on a total output basis, then China is the fourth largest emitter in the world, but if calculated on a per capita basis, then China's emissions are only one-tenth of the OECD average.

In April 2001, the United States announced that it did not intend pursuing the Kyoto Protocol and, in mid-2001, the Australian government announced that while it would move towards meeting the Kyoto Protocol targets, it too would not ratify the Kyoto Protocol (Jehl and Revkin, 2001; Commonwealth of Australia, 2002: 42). The Kyoto Protocol (Articles 25(1) and 25(2)) states that ratification by developed countries representing at least 55 per cent of global greenhouse gas emissions from the UNFCCC Annex 1 countries is required for the protocol to enter into force. The United States currently represents approximately 38 per cent of the emissions from Annex 1 countries. At the time of writing (August 2004), the future of the Kyoto Protocol, and international climate policy more generally, remains uncertain. The US and Australian governments have continued to affirm their position that they will not ratify the Kyoto Protocol, although Australia's Labour opposition has indicated that, if elected, it would make ratification a priority. The European Union and its member countries have, along with Japan, signalled their intention to proceed with the ratification of the protocol and the development of the rules (JI, CDM, sinks) for its operation. If Russia agrees to ratify the protocol, it can enter into force but it is not presently possible to say when or if Russia will take such a step.

Finally, despite the policy commitments and actions of governments and companies, international greenhouse gas emissions have continued to rise. It has been predicted that world primary energy demand will be 57 per cent higher in 2010 compared to 1997 and that global greenhouse gas emissions will grow faster than energy demand due to the increased proportion of fossil fuels in the energy mix (International Energy Agency, IEA, 2000: 27).

### **Australia's International Negotiating Position**

The Australian economy is heavily dependent on the mining and minerals industry, and on the economic benefits brought by access to low-cost energy. The energy intensity of the Australian economy has strongly influenced the international negotiating positions adopted by the Australian government. At COP-3, Australia was among a small minority of states that opposed strong action on greenhouse emissions (McCathie, 1997; M. Gordon, 1997). The Australian government delegation at COP-3 argued that, in the absence of any policy measures to reduce greenhouse gas emissions, Australian greenhouse gas emissions would rise by 43 per cent between 1990 and 2010 (AGO, 1998b: 99; Hill, 2000b). Australia is one of the few countries allowed to



increase its greenhouse gas emissions under the Kyoto Protocol, being required to cap its greenhouse gas emissions at 108 per cent of its 1990 emissions, to be achieved on an annual basis over the five years from 2008 to 2012. Since COP-3, the Australian government has emphasized the importance of rules for flexibility mechanisms, methodologies for sinks and the engagement of developing countries as necessary preconditions for Australia's ratification of the Kyoto Protocol.

The negotiating position adopted by the Australian government was welcomed by Australian industry (Parliament of the Commonwealth of Australia, 2000: 73–4). Australian industry groups have argued that 'carbon leakage' could become a significant economic issue for Australia. Carbon leakage could occur as a consequence of Australian exporters becoming uncompetitive in international markets, and/or Australian producers becoming uncompetitive against imports from countries where there are no constraints on greenhouse gas emissions (Australian Industry Greenhouse Network, 1999: 5–6, 17). The Australian exports that have been identified as being at particular risk are aluminium and liquefied natural gas (LNG) while those at risk from imports are the energy intensive sectors of petroleum refining, pulp and paper, cement, plastics and chemicals, non-ferrous metals and steel (Australian Industry Greenhouse Network, 1999: 5–6, 17–18; Cribb, 1998; Coutts, 2000; Beresford and Waller, 2000: 646). Australian industry has argued that the government should pursue policies that are (a) flexible and cost-effective in their own right, (b) provide the foundations for further reductions if and when this is necessary, and (c) have the least negative impact on competitiveness, investment, regional development and jobs (Australian Industry Greenhouse Network, 1999: 2–6, 10; Business Council of Australia, BCA, 2000a). Industry groups have emphasised that Australia should only ratify the Kyoto Protocol if unfettered use of flexibility mechanisms is allowed, if full credit for land clearing and sinks is provided and if there is a clear path for the inclusion of non-Annex 1 countries in international greenhouse gas abatement programmes (Australian Industry Greenhouse Network, 1999: 10; BCA, 2000b).

### **Australia's National Greenhouse Gas Emissions Profile**

Australia's 2002 National Greenhouse Gas Inventory was released in 2004 (AGO, 2004a), together with an analysis of greenhouse trends and indicators (AGO, 2004b). As shown in Table 6.1, Australia's greenhouse gas emissions in 2002 totalled 550.1 million tonnes of carbon dioxide equivalent (MT CO<sub>2</sub>(eq)), an increase of 1.3 per cent over the 1990 levels of 543.2 MT CO<sub>2</sub>(eq). Emissions from stationary sources (electricity generation, petroleum refining, gas processing, solid fuel manufacturing, manufacturing industries,

Table 6.1 Australian greenhouse gas emissions (1990–2002)

Sector	1990 MT CO <sub>2</sub> (eq)	2002 MT CO <sub>2</sub> (eq)	Change (1990–2002) MT CO <sub>2</sub> (eq)	Change (1990–2002) (%)
Energy	286.2	371.4	85.1	29.7
Stationary energy	195.5	261.9	66.4	34.0
Transport	62.0	79.2	17.2	27.8
Fugitive	28.8	30.2	1.4	5.0
Industrial processes	26.1	26.4	0.2	0.9
Agriculture	95.1	105.6	10.5	11.1
Land use, land-use change and forestry	120.4	29.2	–91.2	–75.8
Waste	15.3	17.6	2.3	15.0
Total net emissions	543.2	550.1	7.0	1.3

Source: AGO (2004b: 6).

construction) contributed 47.6 per cent of total national emissions, transport contributed 14.3 per cent and agriculture contributed 19.2 per cent. The significant reductions in the emissions from land use, land-use change and forestry reflect the significant reductions in the rate at which Australian forests have been converted to agricultural or other land uses.

Perhaps the most controversial issue about the data in Table 6.1 is the manner in which emissions from land use, land-use change and forestry are used. If these were excluded from the inventory, Australia's greenhouse gas emissions would have increased by 23.2 per cent (from 422.8 to 530.9 MT CO<sub>2</sub>(eq)) over the period 1990–2002, significantly greater than the increase allowed under the Kyoto Protocol. Developing accurate estimates of greenhouse gas emissions from land use, land-use change and forestry has been a policy priority for the Australian government and significant research resources have been invested in this. Industry groups have supported the policy emphasis on greenhouse sinks (for example, see Cribb, 1998; Australian Industry Greenhouse Network, 1999: 3, 8; BCA, 2000b). However, environmental NGOs have argued that the focus on greenhouse sinks has diverted policy attention and resources away from the issues of energy efficiency and greenhouse gas emissions reductions (see, for example, Australian Conservation Foundation, ACF, 1999a). It is also relevant to note that there is as yet no consensus on how greenhouse gas emissions from land clearing (that is, the removal of tree cover and vegetation to enable land to be

used for productive agricultural purposes) and sinks are to be accounted for under the Kyoto Protocol.

### **Domestic Policy Responses**

To date, Australian greenhouse policy has focused on 'no regrets measures', defined as 'a measure that has other net benefits (or, at least, no net costs) besides limiting greenhouse gas emissions or conserving or enhancing greenhouse gas sinks' (AGO, 1998b). That is, the emphasis of policy has been on encouraging Australian industry to contribute to reducing greenhouse gas emissions while not threatening Australia's international competitiveness (Howard, 1997; Hill, 2000c). The concept of no regrets (that is, those measures that are financially worthwhile in the absence of any concerns regarding global warming) has been criticized because it is seen as effectively excluding climate change as a factor in decision-making processes (Hamilton, 1996).

The Australian government's major policy initiatives on greenhouse have been:

- The 1992 National Greenhouse Response Strategy which established the initial principles and actions on greenhouse, with particular emphasis on information gathering and research (Commonwealth of Australia, 1992b).
- The establishment of the Greenhouse Challenge programme in 1995, to encourage and support voluntary greenhouse gas emission reductions by large corporations (Commonwealth of Australia, 1995).
- The 1997 Safeguarding the Future package of measures, worth A\$180m (Howard, 1997). The measures adopted included accelerating energy market reform, developing and implementing efficiency standards for power generation, establishing mandatory targets for the uptake of renewable energy in power supply, improving the fuel efficiency of the car fleet, implementing national energy efficiency codes and standards, fostering growth in plantation forestry and native revegetation, establishing the National Carbon Accounting System (NCAS) to develop the accounting framework for Australia's emission reduction and sink enhancement activities and extending the Greenhouse Challenge. In addition, the Australian Greenhouse Office (AGO) was established to provide advice to the Commonwealth on greenhouse issues, to administer specific greenhouse programmes, to contribute to the development of Australia's position on greenhouse issues and to act as a central contact point for industry and other stakeholders (for an overview of the AGO's activities, see Smith, 2002).

- The 1998 National Greenhouse Strategy which elaborated on the implementation plans in the 1997 Safeguarding the Future measures (AGO, 1998b).
- The 1999 Measures for a Better Environment which included A\$400m for initiatives such as commercializing and increasing the uptake of renewable energy and energy-efficient technologies, new fuel standards and energy labelling programmes.<sup>3</sup> The Greenhouse Gas Abatement Programme (GGAP), the centrepiece of the Measures for a Better Environment, focuses on measures that will deliver maximum carbon abatement or sink enhancement, have long-lasting effects that translate into sustained emissions reduction for the period 2008–12 and/or beyond, be cost-effective and have least cost impact on economic activity.<sup>4</sup>

In total, the Commonwealth government has committed almost one billion Australian dollars to greenhouse issues (Commonwealth of Australia, 2002: 4). It has been estimated that the policy measures adopted to date (excluding the effect of the Measures for a Better Environment and the potential contribution of sinks) will save between 58 and 64 MT CO<sub>2</sub>(eq) (Commonwealth of Australia, 2000a: vi, 3, 6). If emissions from land use, land-use change and forestry are included, greenhouse gas emissions are projected to be 110 per cent of 1990 levels by the 2008–12 period, compared to a projected total of 123 per cent in the absence of policy measures (Commonwealth of Australia, 2003: 2). The projected totals differ from the 143 per cent increase that was used as the basis for Australia's Kyoto Protocol negotiating position as a consequence of the inclusion of land use, land-use change and forestry in the national greenhouse inventory. Emissions from stationary energy (70 per cent) and transport (42 per cent) are predicted to grow significantly over the period 1990 to 2008–12, but these increases are expected to be offset by changes in land use (Commonwealth of Australia, 2003: 3–5).

In addition to the Commonwealth's activities, the states and territories have all adopted their own greenhouse strategies (see, generally, Commonwealth of Australia, 2000a: 7–28). The Victorian government's *Victorian Greenhouse Strategy* (State of Victoria, Department of Natural Resources and Environment, 2002) is representative of the strategies that have been adopted. The strategy identifies ten areas for action, namely government leadership, energy supply, industry and commerce, waste management, local government, households, travel and transport, greenhouse sinks and natural resource management, agriculture and adaptation. In the specific context of industry and commerce, the measures adopted include requiring licensed facilities to implement cost-effective opportunities for improving energy efficiency and reducing greenhouse gas emissions, supporting the development and

application of sustainable energy technologies and practices in manufacturing, supporting the uptake of greenhouse gas abatement technologies, improved access to information on environmental management systems, improving energy management in large commercial buildings and the establishment of a government/industry greenhouse roundtable.

There is ongoing discussion regarding the most appropriate policy measures that can be adopted to enable Australia to meet its targets under the Kyoto Protocol while not adversely affecting Australia's economic interests. For example, in 1999, the AGO issued a series of discussion papers on emissions trading and how such a scheme could be implemented in Australia (AGO, 1999a, 1999b, 1999d, 1999f). While Australian industry has indicated its support in principle for a national emissions trading system, it has strongly opposed the unilateral implementation of such a system because of the potential cost to Australian business (Australian Industry Greenhouse Network, 1999: 14–15; Cribb, 1998). In August 2000, the Australian government announced that it would not establish an emissions trading scheme until an international greenhouse gas emissions trading scheme had been established.

## THE GREENHOUSE CHALLENGE

Australian industry approached the Commonwealth government in 1995 with a proposal for a voluntary greenhouse gas abatement programme. The primary motivation was the threat that the government would introduce a carbon tax to enable Australia to meet its commitments under the UNFCCC (AGO, 1999e: 51; Parker, 2002: 79; Lipman and Bates, 2002: 89). In response, the Greenhouse Challenge was established in 1995 as a voluntary programme for organizations (both public and private sector) to undertake and report on their actions to abate greenhouse gas emissions. The Greenhouse Challenge was seen as allowing the government to abandon the idea of a carbon tax while also providing a policy initiative that could be presented at international negotiations (Parker, 2002: 79). In line with the government's no regrets approach to greenhouse policy, the overall aim of the Greenhouse Challenge programme is to achieve the maximum practicable greenhouse gas emissions abatement, while not compromising business objectives such as development and growth (Howard, 1997).

From 1995 to 2002, the organizations wishing to participate in the Greenhouse Challenge had to work through a six-step process: (i) to establish an inventory of greenhouse gas emissions; (ii) to develop an action plan to minimize emissions or enhance sinks; (iii) to forecast expected reductions in emissions; (iv) to sign a Cooperative Agreement with the Commonwealth government; (v) to monitor and regularly report greenhouse gas emissions

against targets; and (vi) to be open to independent verification (AGO, 2000d). These requirements were revised slightly in 2003, when a modified Greenhouse Challenge implementation plan was agreed by the Joint Consultative Committee that oversees the Greenhouse Challenge. The major changes related to the requirement to report publicly on both absolute and relative emissions performance, to provide regular and accurate statements on performance and to develop appropriate key performance indicators to allow emissions intensity to be calculated and tracked (AGO, 2003b).

Organizations joining the Greenhouse Challenge are required to prepare an inventory of their greenhouse gas emissions, using the last complete accounting year as the base year. The inventory should have sufficient detail to identify all significant sources of emissions. Thereafter, annual emissions inventories are normally required. These should detail the benefits arising from previously reported measures and describe the factors that have influenced changes in emissions. Under the original Greenhouse Challenge, participating organizations were required to forecast their greenhouse gas emissions in the years 2000 and 2005, and to include an assessment of factors that could influence change in total emissions. This requirement to predict emissions has now been removed.

The action plan to reduce emissions can include capital and operating projects to improve energy and process efficiencies and/or abate emissions, management initiatives, improvement programmes, the enhancement of sinks, the use of renewable energy technologies, research and development projects and participation in other domestic and international joint projects.

The inventory and action plan are formalized in a Cooperative Agreement (now referred to as Tier 1 and Tier 2 Agreements, depending on the quantity of greenhouse gases emitted), which is developed in liaison with the AGO. The agreement is signed by the chief executive of the participating organization and by ministers or senior government officials on behalf of the Commonwealth.<sup>5</sup> The Greenhouse Challenge does not involve the imposition of specific abatement targets on organizations but rather works to maximize economically viable abatement actions with each company (Commonwealth of Australia, 2001). Organizations participating in the Greenhouse Challenge are expected to commit to taking cost-effective and practical abatement action and to continuous improvement.

Each organization participating in the Greenhouse Challenge is expected to report annually to the AGO, detailing progress and changes in greenhouse gas emissions as well as detailing the effectiveness of policies and measures to improve energy and process efficiencies, abate emissions and enhance sinks. In addition, participating organizations are expected to report publicly on their performance. The modified Greenhouse Challenge implementation plan requires companies to prepare a regular (annual) public statement on the

undertakings contained in the agreement, including details of both absolute (that is, bulk total) and relative (for example, efficiency) performance. This represents a change from the original Greenhouse Challenge where participating organizations were only required to report on the greenhouse abatement achieved.

In addition to agreements with individual organizations, facilitative agreements (with bodies such as industry associations, where the association agrees to support and actively encourage its members to join the challenge) and aggregate agreements (generally made by an industry sector with an industry association, which then enters into an agreement on behalf of its members) can also be negotiated under the Greenhouse Challenge.

The participants in the Greenhouse Challenge are allowed to use the Greenhouse Challenge logo to advertise their participation in the programme (AGO, 2000b). Organizations may withdraw from the Greenhouse Challenge, without sanction, at any time (Parker, 1999: 66; AGO, 2000d). The AGO has stated that forecasts of emissions abatement will not be interpreted as, or used to, set targets, and no penalty will apply where forecasts are not achieved.

The organizations participating in the Greenhouse Challenge must be open to independent verification, to ensure the accuracy of the information contained in Greenhouse Challenge progress reports. The AGO has established a panel of independent verifiers (AGO, 2001c: 9–10), and Australian industry has strongly supported independent verification, seeing it as critical to the credibility of the Greenhouse Challenge (AGO, 2000c, 2001c). The process focuses on those aspects that can be objectively verified (that is, emissions inventories, the actions that have been reported as undertaken and the accuracy of the claimed greenhouse gas emission reductions) (AGO, 1999c). The AGO originally recommended that the verification process should also provide an assessment of the management system that has been implemented to manage greenhouse gas emissions, and that the principles of ISO14001 should guide this part of the assessment to provide a ‘consistent and internationally recognised framework’ (AGO, 2000c: 3–4). In practice, however, the adequacy of management systems has not been assessed. The verification process also does not consider whether all practicable actions have been undertaken or whether the reasons provided for not undertaking actions specified in action plans are robust (AGO, 2000a). An inventory can be verified as materially accurate if the verifier can determine that the reported and actual inventories (baseline, projections and planned abatement actions) are within a 10 per cent materiality threshold (AGO, 2000c: 5–9). There have been three rounds of independent verification: a pilot programme in 1998, and two complete rounds in 2000 (AGO, 2001c) and 2002 (AGO, 2003a). Because of industry concerns regarding confidentiality, the report of the first complete round simply indicated whether the



verifications of inventory and actions undertaken were materially accurate or not (see AGO, 2001c: 25–8 for the verification statements from the 2000 programme). Greater information was provided in the report of the 2002 verification process, with (in situations where there was a material discrepancy) the report detailing the percentage error but not the actual emissions numbers. In the 2002 verification, of the 23 Greenhouse Challenge members assessed, 16 were considered to have reporting that was comprehensive, comparable and free from material discrepancies, one had a material discrepancy in the inventory, three had material discrepancies in their abatement estimates and three could not be fully verified due to lack of some supporting verification (AGO, 2003a).

To maximize participation in the Greenhouse Challenge, the Commonwealth government has also introduced the Managing Energy for Profits and Greenhouse Allies programmes (AGO, 1999e: 14; AGO, 1998a). Managing Energy for Profits is intended to help medium-sized firms reduce energy consumption, improve their bottom line and reduce greenhouse gas emissions. In most instances, energy consultants are appointed to assist firms in mapping their energy use and workshops are held detailing how to join the Greenhouse Challenge. This programme is aimed at firms that would typically spend approximately A\$500 000 to A\$2 million a year on energy and fuels. An example is a project conducted by the Plastics and Chemicals Industry Association (PACIA) to identify greenhouse gas emission reduction opportunities in the chemical industry. The AGO provided funding for a technical consultant to visit sites, advise on opportunities to save energy and provide assistance in the development of inventories and action plans. The project resulted in the 12 participating companies identifying potential savings of, on average, 13.5 per cent of their energy consumption (representing a potential saving of A\$3m on a total energy bill of A\$24m). These were opportunities with a payback period of two years or less (Rex, 2000).

The Greenhouse Allies programme takes advantage of the relationships and networks between existing Greenhouse Challenge members and small businesses. In this programme, Greenhouse Challenge participants assist smaller businesses to improve energy management and implement sound greenhouse practices without undue time, financial or expertise costs to their company. Greenhouse Allies do not sign cooperative agreements, but, rather, are supported and mentored by Greenhouse Challenge participants.

The AGO's responsibilities under the Greenhouse Challenge include consulting with industry during the development of Cooperative Agreements, promoting the Greenhouse Challenge programme and the achievements of participants, providing technical support, monitoring and reporting on the implementation of the programme, publicising the achievements of individual enterprises and promoting the Greenhouse Challenge logo.<sup>6</sup>



## **Environmental Effectiveness**

### **Performance against specified targets**

The targets specified by the Australian government for the Greenhouse Challenge relate to the number of participating organizations, the coverage of Australia's greenhouse gas emissions, and the emissions abatement expected as a result of the challenge.

The National Greenhouse Strategy envisaged that 500 companies would have signed Cooperative Agreements by the end of 2000 and that 1000 companies would have signed by the end of 2005 (Howard, 1997). The target for the end of 2000 was met and, as of 2 December 2003, 787 organizations had joined the Greenhouse Challenge (AGO, 2003c). In addition, over 400 small businesses had participated in the Greenhouse Allies programme (AGO, 2000e: 14–15). Interestingly the AGO's 2002/2003 Annual Report (AGO, 2003d) shows that membership of the Greenhouse Challenge had grown from 773 organizations on 1 July 2002 to 824 members on 30 June 2003 (that is, there appears to have been a reduction in membership over the period June to December 2003). There has been some press coverage of the issue, with one report suggesting that 77 organizations had withdrawn from the scheme in 2003 and only 49 had joined (Rose, 2004).

The Greenhouse Challenge aims to cover 55 per cent of national greenhouse gas emissions. By 2000, Greenhouse Challenge participants accounted for approximately 47 per cent of national emissions, with the Greenhouse Challenge having almost total coverage in a number of major industrial sectors, including 98 per cent of greenhouse gas emissions from electricity generation and distribution, 98 per cent of oil and gas extraction, 89 per cent of machinery and metals manufacturing (including 100 per cent from iron and steel and aluminium, and 91 per cent from coal mining) (AGO, 2000e: 14).

The original projection was that the actions taken under the Greenhouse Challenge would achieve a total emissions abatement of 15 MT CO<sub>2</sub>(eq) by 2000 (AGO, 1999e: 12, 24–8). In practice, the cumulative reported emissions abatement was 19.2 MT CO<sub>2</sub>(eq) (AGO, 2002), significantly greater than the original predictions. It is, however, interesting to note that in the years leading up to 2000, the Australian government had predicted that an emissions abatement of 23.5 MT CO<sub>2</sub>(eq) would be achieved in 2000 (see, for example, AGO, 1999e: 12, 24–8). The reason for the discrepancy is that it appears that many participating organizations did not implement all of their planned actions. Of the 76 Greenhouse Challenge participants that had submitted progress reports by mid-2000, only eight had met their original forecasts for emissions abatement (Parliament of the Commonwealth of Australia, 2000: 340). The AGO has not published an analysis of this apparent under-performance. It is also relevant to note that the independent verification programme does not

investigate the reasons why organizations do not achieve their forecast emissions abatement.

Without the Greenhouse Challenge, annual emissions from the participating organizations were predicted to have grown between 1995 and 2000 by 25.6 MT CO<sub>2</sub>(eq) or 20.8 per cent whereas greenhouse gas emissions from participating organizations are, in fact, expected to grow by only 6.4 MT CO<sub>2</sub>(eq) or approximately 5 per cent. In many sectors (including oil and gas extraction, coal mining, food processing, textiles, petroleum refining, cement manufacturing and iron and steel production), participants expected to achieve absolute net reductions over the 1995–2000 period. However, these reductions were offset by increases in emissions from the aluminium and other (non-coal) mining sectors (for further details on the performance of specific industry sectors, see AGO, 2001a: A-15-A-19).

The data presented show that the Greenhouse Challenge has exceeded its targets for the number of participating companies and the amount of greenhouse gas emissions reductions that are achieved. In its revised Greenhouse Challenge implementation plan, the AGO has identified a series of performance indicators but has not yet (as at August 2004) published targets for these. These performance indicators are total aggregate emissions abatement; percentage of Greenhouse Challenge members with energy or greenhouse management systems and percentage of members with greenhouse indicators integrated into their business planning processes; programme coverage; reporting obligations met by members; and number of reports verified (AGO, 2003b).

### **Beyond business as usual?**

While the Greenhouse Challenge has apparently been effective in terms of meeting its specified targets, this is of limited relevance if such targets would have been met anyway. The question that needs to be asked, therefore, is whether or not the Greenhouse Challenge has resulted in the abatement of greenhouse gas emissions beyond those reductions that would have been achieved equally well without it?

Before addressing this question, it is first of all necessary to consider how emissions abatement is assessed. In broad terms, emissions abatement efforts can be characterized against a historical baseline (that is, by comparing absolute emission levels at different points in time) or against alternative future scenarios (that is, by comparing expected emissions at a given point in time with or without abatement actions). Alternative future scenarios can be defined either in terms of static efficiency measures or ‘business as usual’. The static efficiency approach assumes that there will be no changes in efficiency and, therefore, future estimates are based on the organization’s forecast activity (for example, production rate, changes in business activities). It is

assumed that greenhouse gas emissions are directly proportional to production rates or other measures of business activity (for example, profit). In contrast, the business as usual approach takes into account the efficiency changes that would have occurred in the normal course of business. Large-scale economic models typically assume a rate of improvement of 1.0–1.5 per cent per annum (Australia Institute, 2000: 3). The business as usual approach is often used for economy-wide projections of emission levels that incorporate broad-based assessments of changes in efficiency. However, these broad assessments of changes in energy efficiency cannot readily be extrapolated from the macro (or economy wide) level to the micro level (that is, the individual facility or the specific industry sector) (Krarup and Ramesohl, 2000: 37). The consequence is that the Greenhouse Challenge relies on the static efficiency approach to predict greenhouse gas emissions (Parliament of the Commonwealth of Australia, 2000: 333). As energy efficiency generally improves over time, the static efficiency approach tends to generate higher baselines than the business as usual approach and, therefore, the emissions reductions that are claimed are likely to overestimate the outcomes that have been achieved. Furthermore, given that the task of describing the baseline path is the responsibility of the participating companies, there is a clear incentive for firms to overstate their expected emissions growth as this will mean that they will appear to have achieved even greater reductions in emissions (Sullivan and Ormerod, 2002: 184–7). These issues regarding the difficulties in assessing performance were highlighted by some of the interviewees for this research:

I must admit to a degree of cynicism regarding efforts to predict the future, let alone to take account of technological changes and their influence on greenhouse gas emissions. It seems to me that all one can really say is what one's plans are. Of course, even these can change in response to changes in the business climate. (Energy/Environmental Consultant)

Under the Greenhouse Challenge, companies set their own targets. There is a real question if these targets represent anything beyond business as usual. (Energy Consultant)

Defining the baseline is difficult. The question is how do you project what improvements in efficiency will be? (Environmental Manager, Manufacturing Company)

While over half of the participants surveyed in the 1999 evaluation of the Greenhouse Challenge indicated that the programme had played an important role in stimulating abatement action (AGO, 1999e: 46), many of the actions would probably have been taken anyway. Anecdotally, the Greenhouse Challenge does appear to have had the effect of encouraging some firms to

bring forward planned energy saving or greenhouse gas emission reduction projects, but beyond those initiatives with clear short-term financial benefits, there is limited evidence that the Greenhouse Challenge has actually led to firms changing the manner in which they operate or make decisions on greenhouse or energy issues. As noted by some of the environmental managers interviewed for this research:

The reality is that companies join the Greenhouse Challenge so as to avoid regulation or energy taxes. While progress against the targets has been quite good, companies would have been doing most or all of these things anyway. Joining the Greenhouse Challenge is seen as better than being forced to take action or being pointed out as a company that has not joined the Challenge.

Energy is a key business issue for us and we have continuously optimised energy efficiency here. If there were more easy wins, we would certainly have found them by now.

Our energy consumption is such a small cost that it seems like a huge amount of effort for little or no return to reduce it even further.

### **Issues in assessing performance**

There are a number of specific issues associated with the measurement of performance under the Greenhouse Challenge that make the assessment of the effectiveness of the programme difficult. These are (a) the timing of data availability, (b) the reliance on static efficiency measures to assess the effectiveness of the Greenhouse Challenge (discussed above), (c) the manner in which outcomes are described (in terms of emissions abatement), (d) the targets against which performance is assessed, and (e) the relationship between emissions and impact. Each of these is discussed below.

The National Greenhouse Gas Inventory is released some 15–18 months after the year to which it applies (for example, the 2002 inventory was released in 2004). One of the consequences is that the effects of the various policy measures that have been adopted will not necessarily be reflected in the inventory (given both the inevitable lag in the implementation of policy and the retrospective nature of the reporting process). The requirements for Greenhouse Challenge participants to predict their greenhouse gas emissions abatement was intended to overcome this limitation. However, as noted above, data on the actual emissions abatement achieved were not available until 2002, and these data differed quite significantly from the predictions that the government had been making regarding the emissions abatement that would be achieved.

While emissions abatement is an important measure of the effectiveness of action plans, the critical issue for greenhouse policy is the absolute value of emissions. While industries may have had success in abating emissions, this

may be of little relevance if (for example, as a consequence of growth in the business) the overall result has been an increase in total emissions. This is illustrated by the example of greenhouse gas emissions from electricity generators and distributors, where the actions taken under the Greenhouse Challenge were expected to achieve an annual abatement of 5 MT CO<sub>2</sub>(eq) in 2000. However, as is clear from the 2002 inventory, emissions from the stationary energy sector have increased significantly as a consequence of a substantial growth in energy demand. The revised reporting requirements under the Greenhouse Challenge are intended to address this, at least in part through requiring participants to report total emissions as well as emissions abatement. However, as indicated by the results of the 2002 verification programme, there are still significant issues with the data being reported and the reliability of these data.

One of the specific difficulties with assessing the performance of the Greenhouse Challenge is to define the targets against which performance is to be assessed. There is no consensus on these targets, and three different approaches could be considered. The first is to look at the targets that have been set for the Greenhouse Challenge by the Australian government. As discussed above, by these measures, the Greenhouse Challenge can, in broad terms, be said to have been successful (despite the uncertainties around the actual level of emissions abatement that have been achieved). The second approach is to look at the Kyoto Protocol targets (that is, an allowable 8 per cent increase between 1998 and the period 2008–12). The Greenhouse Challenge can be seen as having made an important contribution to this target in that the efforts of companies to abate emissions (with the exception of certain sectors such as electricity generation) appear to have (broadly) resulted in companies stabilizing their greenhouse gas emissions. If such progress is maintained, it appears that Greenhouse Challenge participants should ensure that their growth in greenhouse gas emissions is substantially in line with the national targets allowed under the Kyoto Protocol. The third frame of reference is to look at the targets that would need to be met in order to stabilize atmospheric greenhouse gas emissions at an acceptable level. If, as discussed above, this requires a 60–80 per cent reduction in greenhouse gas emissions over the period 1990 to 2050, equivalent to reductions of between 1 and 1.5 per cent per annum, it is clear that the Greenhouse Challenge has not had anything like the necessary effect on greenhouse gas emissions from participating organizations.

The advantage of using greenhouse gas emissions as a basis for policy evaluation is that they can be readily measured or calculated. However, it is important to recognize that there are various levels of uncertainty associated with the emission estimates. For some sectors and gases (for example, CO<sub>2</sub> emissions from stationary energy) the level of uncertainty is relatively low

(less than plus or minus 5 per cent) whereas for others the uncertainty is much higher (AGO, 2001b: v). At the international level, the concentration of greenhouse gases in the atmosphere represents a measure of the overall effectiveness of international efforts to control greenhouse gas emissions. However, there are considerable uncertainties regarding the effect of sinks on atmospheric concentrations of greenhouse gases. For example, carbon sequestration in trees may provide some short-term benefits but may not affect longer-term atmospheric concentrations of greenhouse gases. There are also great uncertainties about the impacts of climate change. The consequence of this is that while greenhouse gas emissions provide an accepted measure of policy performance, the significance of the impacts of these emissions remains subject to debate.

### **Economic Efficiency**

There are limited published data on the costs and benefits of energy or greenhouse expenditures. The main reason appears to be that, for many companies, energy is a minor cost, typically between 2 and 4 per cent of total costs (AGO, 1999e: 41) and, therefore, not a management priority. From discussions with companies, it appears that the Greenhouse Challenge has not substantially enhanced the acquisition of financial data relating to environmental initiatives. The paucity of financial information (which is also a feature of the Australian experience with EMSs) makes it difficult to draw firm conclusions about the economic efficiency of the Greenhouse Challenge relative to other policy instruments targeted at the same issue.

The emphasis of the Greenhouse Challenge is on 'no regrets' measures. There is limited evidence that participating firms have gone beyond a narrowly defined interpretation of the costs and benefits of greenhouse gas emission reduction measures. The majority of the projects that have been implemented are low-cost projects that provide very short payback periods or are projects that would have been implemented anyway (Commonwealth of Australia, 1998; AGO, 1999e: 30). While broader business benefits such as an improved 'social licence to operate', early capture of low-cost abatement options and the adoption of structured approaches to greenhouse gas emissions abatement have also been reported (Beresford and Waller, 2000: 648, 650–51; Parker, 2002: 82), there is limited evidence that these have significantly influenced the decisions on specific projects. In this context, the Greenhouse Challenge can be said to have been economically efficient in that it has not required firms to take measures beyond those that can be clearly justified in economic terms. It could also be argued that the Greenhouse Challenge does not provide the strong drivers required to encourage companies to take advantage of all the opportunities that might be available.

The Greenhouse Challenge appears to have had little impact on investment criteria and planning and, apart from some isolated cases, a broader shift of investment attitude (for example, relaxation of payback requirements) could not be observed. This was acknowledged by some of the interviewees for this research:

Of course, the reality is that action plans tend to get put to one side in situations where there are other pressures on the company. When costs are cut, environmental and energy programmes tend to be the first to go, even where there are real cost-saving opportunities. (Environmental Manager, Chemical Manufacturing Company)

The fundamental differences between different industry sectors need to be recognised. Some are in a position where they can absorb costs or pass them on to their customers. However, we are competing against international companies and we do not have the luxury of being able to afford to pay more for energy. We are price-takers. Furthermore, we are constrained by the available electricity sources. If brown coal is the cheapest source of electricity, then that is what we will take. (Environmental Affairs Manager, Chemical Manufacturing Company)

In Australia, over the past ten years (where inflation has generally been between 2 and 4 per cent) firms have typically expected environmental or energy investments to repay the capital investment within two years (Sullivan et al., 2000; Sullivan and Ormerod, 2002; van Berkel, 2000). This represents an expected rate of return of 50 per cent. Indeed, it could even be that the Greenhouse Challenge has perpetuated a 50 per cent rate of return as an 'acceptable' target for energy investments. For example, the Managing Energy for Profits project conducted by PACIA described above focused on opportunities with a payback period of two years or less (Rex, 2000). Similar rates of return were presented in the National Cleaner Production Demonstration project which ran from 1994 to 1996. The project involved the provision of technical assistance for the completion of cleaner production assessments for ten different industries (Environment Australia, 1998). Fifty-five per cent of the projects identified involved no capital investment (that is, immediate payback), 21 per cent of the projects had a payback of less than six months and a further 10 per cent had payback periods of between six months and two years. Projects with a payback period of greater than approximately two years were not implemented.

The expected rate of return on energy and environmental investments is significantly greater than the typical investment criteria in industries such as energy, oil, gas and mining, which would expect large capital investments (for example, new power generating equipment) to provide a rate of return of between 15 and 20 per cent. While such a comparison may not be strictly fair for small and medium-sized companies, where access to capital may be a



major barrier, it indicates that there may be significant opportunities for energy or environmental performance improvements that are economically viable (and which are relatively risk-free) that are not being implemented. This raises the question of whether an expected rate of return of 50 per cent is an 'immutable requirement' for all energy or greenhouse-related investments. If companies are allowed to define their own requirements, it appears likely that this will continue to be the case. However, there is also evidence that these requirements can be altered. Perhaps the best example is the outcomes that have been achieved by the New South Wales Sustainable Energy Development Authority (SEDA). One of SEDA's key initiatives is the Energy Smart Business programme.<sup>7</sup> The participants ('partners') in the ESB programme sign a Memorandum of Understanding (MoU) with SEDA. As part of the MoU, SEDA provides technical and implementation assistance through external contractors called Partner Support Managers (PSMs). In return, the partners agree to implement cost-effective upgrades (where cost-effective is defined as projects that provide an internal rate of return of greater than 20 per cent) across at least 75 per cent of their facilities within five years (Cooper et al., 1999). The ESB programme was officially launched on 4 December 1997. Approximately 170 companies are involved in it and, in total, some 230 companies have participated since the programme was initiated in 1997. To date, some 1700 individual projects have been implemented, with the participating companies gaining an average 38 per cent internal rate of return on their investments in energy efficiency. SEDA's experience has been that many of these 'economically justified' projects would not have been implemented without the Energy Smart Business programme (Cooper et al., 1999).

### **Transaction Costs**

The Greenhouse Challenge programme has a total budget of A\$36 million for the period 1995–2003 (AGO, 1998b: 34). However, there is limited information available on the costs of participation and compliance by participating firms or industry associations. Interviews with company environmental managers show that the Greenhouse Challenge is seen as another task that they are required to complete. Apart from specific costs (for example, if consultants are required to assist with inventory preparation), most of the tasks and costs associated with participation are absorbed within existing workloads and budgets. Consequently, the data necessary to determine the transaction costs of the Greenhouse Challenge are not available.

Some indication of the magnitude of the transaction costs can be gained by comparing the requirements of the Greenhouse Challenge with those that would be imposed in a mandatory programme. In broad terms, the Greenhouse



Challenge requires data gathering, a negotiation process (to agree the Cooperative Agreement), annual reporting, verification, publicity and communications, and the development of technical guidance and provision of support to participating firms. The implementation effort is divided between the AGO and industry. Apart from enforcement (given that participation is voluntary), the programme contains all of the elements that one would expect to see in programmes of this type. Of course, this says nothing of the specific environmental or economic outcomes that are achieved from the Greenhouse Challenge.

Another way of looking at transaction costs is to ask how many of these costs would have been incurred anyway. While there is a broad consensus that Australian companies do not use energy as efficiently as they could, firms appear reluctant to commit resources to energy auditing (even though the cost of acquiring such information is a necessary prerequisite for achieving energy savings). In this context, the division between administrative costs and economic efficiency is somewhat clouded. Those firms that wish to achieve energy savings would have to gather at least some of the information required under the Greenhouse Challenge anyway (Centre for International Economics, 1999a: 21–2). Therefore, it is not clear whether the costs associated with participation in the Greenhouse Challenge should be described as transaction costs or whether these could be described as ‘necessary business improvement costs’. It is important to recognize that there are important differences between the data that are collected for greenhouse inventories and the data required for energy management. Furthermore, actions to save on energy costs may be very different (or even conflict with) those required for greenhouse gas emission reductions. As an illustration, it may be possible to save on energy costs by purchasing electricity at night rather than during the day without any change in the energy consumption of a facility. This is a somewhat simplified example as it does not account for the daytime and night-time fuel mix or the potential advantages of smoothing energy demand over the day. The key issue is that, at the level of the individual firm, energy cost savings do not necessarily translate into improved greenhouse performance or reduced energy consumption.

A specific issue in the implementation of Australian greenhouse policy has been that the AGO has focused primarily on broad policy objectives and the international dimension. For many firms, there is a need for more direct technical support to supplement the broad policy emphasis of the AGO and to ensure that the benefits of energy efficiency are maximized. Initiatives such as the ESB and the Managing Energy for Profits programmes represent important steps forward in bridging this gap between macro and micro policy initiatives. However, it is also pertinent to note that participating in multiple programmes is likely to entail additional transaction costs for organizations, and that the

Greenhouse Challenge may also reduce the transaction costs associated with the implementation of other policy instruments. For example, the Commonwealth government has canvassed whether membership of the Greenhouse Challenge and commitment to independent verification and monitoring should be a necessary precondition to accessing credit arrangements under a greenhouse gas emissions trading programme (Commonwealth of Australia, 2000b: 19–20). The government concluded that building on the reporting and verification processes of the Greenhouse Challenge would minimize duplication and, hence, minimize the transaction costs associated with an emissions trading scheme. However, the Greenhouse Challenge verification process is unlikely to be sufficiently robust for an emissions trading programme. Specific issues that would need to be considered are the materiality threshold (it is likely that emissions estimates would need to be accurate to 1 per cent, rather than the 10 per cent that is presently used to certify inventories as materially accurate) and the timing of reporting (that is, emissions abatement and emissions trades may need to be recorded in real time rather than retrospectively as is presently the case).

Finally, it is pertinent to note that the transaction costs for Greenhouse Challenge participants may actually be negative, reflecting benefits associated with participation in the programme. These may include promotional and PR opportunities through participation, and the opportunity to get credit for actions that the company had already planned on doing and to derive benefits they were already beginning to see from things like EMSs (Parker, 2002: 82).

### **Competitiveness**

Because of the energy dependence of the Australian economy, the economic effects of imposing greenhouse gas emission limits are a major concern for Australian industry. The Greenhouse Challenge is seen by government and by industry as a means of ensuring that Australian companies are not disadvantaged by greenhouse policy measures, and has been used by both industry and government to argue that additional policy measures such as taxes or quotas are not required.

It could be argued that the Greenhouse Challenge, as a government funded programme, is effectively a subsidy to Australian companies. This argument could, in particular, be levelled at aspects of the Managing Energy for Profits programme, where the government has paid for consultancy or other support for companies. However, the sums of money involved are relatively small and the reality is that many other countries run similar programmes. The consequence is that the significance of the Greenhouse Challenge to international competitiveness (either in absolute or relative terms) is minor. Furthermore,

the ready access to information and support materials means that the knowledge and learning outcomes are available to all interested parties, irrespective of their country of operation or origin.

Given that the Greenhouse Challenge is open to any firm that wishes to participate, there is no evidence that membership of the programme has impacted on competitiveness at the domestic level. While there may be financial benefits such as energy saving or marketing associated with membership, non-participants may benefit from avoiding the transaction costs associated with the Greenhouse Challenge. The active involvement of many industry associations has helped ensure that a 'level playing field' is maintained, both within industry sectors and across industry as a whole.

What is interesting is that outside the Greenhouse Challenge, Australian greenhouse policy has involved significant transfers of money to the fossil fuel and energy-intensive industries. Reidy (2003) has identified that a total of A\$141m has been given to projects that at least partially support fossil fuel producers. Under GGAP, some A\$70m has been provided to the coal industry and A\$18m to the aluminium sector (A\$11m to assist with energy efficiency improvements and A\$7m to replace oil with natural gas at an alumina refinery) (Reidy, 2003). At this level, it could be argued that these are subsidies that potentially provide advantage for Australian firms.

### **Soft Effects**

Perhaps the most important feature of the Greenhouse Challenge is that it has put the reduction of greenhouse gas emissions explicitly on to business decision-making agendas. Many firms have reported management and cultural changes, in particular in the processes and practices influencing the way decisions are made and in placing greenhouse emissions in a broader business context (Parker, 1999; AGO, 1999e: 40–43; Parliament of the Commonwealth of Australia, 2000: 347–51). The requirement for CEOs to sign off on Greenhouse Challenge Agreements is seen as creating the organizational impetus to ensure that the commitments in such agreements are met (Parliament of the Commonwealth of Australia, 2000: 348–9). The participating organizations have also reported a range of other changes, such as the appointment of staff with responsibility for greenhouse issues, the provision of greenhouse abatement related training for staff, the provision of awards for staff to recognize excellence in greenhouse abatement activities, and skills development in relation to the development of action plans and emissions inventories (AGO, 1999e: 42–3). Some of the environmental managers from the mining and energy sectors interviewed for this research confirmed these outcomes:

Greenhouse is now a specific area of management focus with its own budgets, resources and responsibilities. Our board takes an active interest in the issue and greenhouse performance is one of those things, along with health and safety, that this a part of our regular reports to the board.

The Greenhouse Challenge has raised the profile of greenhouse gas emissions and has helped improve knowledge of greenhouse issues in organisations that have joined the Challenge. It has helped ensure that greenhouse issues are explicitly included in business decision-making.

We have various initiatives to encourage our employees to make suggestions for new projects or to improve the way we do things now.

It has been argued that the Greenhouse Challenge has led to the development of expertise within government and within industry on how to identify, monitor, manage and report greenhouse gas emissions (AGO, 1999e: 42–3; Australian Industry Greenhouse Network, 1999: 12). Industry has suggested that its active involvement has improved the government's understanding of how more efficient and effective policies and measures can be developed, while also enhancing the effectiveness of the Greenhouse Challenge through encouraging companies to participate in the programme and in progressing specific aspects of it, such as verification and the development of reporting materials and guidance for participating firms (Parker, 1999: 67; Australian Industry Greenhouse Network, 1999: 7). Industry has also welcomed the opportunity to influence government policy directly, as illustrated by the following comments from industry association representatives:

The great strength of the Greenhouse Challenge is that the door is always open. It allows us to discuss issues and find solutions that are good for our members and for the environment.

The reality is that the AGO lacks the hard technical expertise that industry has. We see our role as being to ensure that policy not only meets environmental objectives but also our members' business needs.

The AGO has provided firms with access to information about cost-effective abatement actions for organizations of their size and nature in the form of public profiles, case studies and workbooks about the types of actions that participants have undertaken. While this information is widely available, it is unclear whether it, of itself, has stimulated any significant changes in energy management (other than, perhaps, at the very basic level of switching off lights and equipment at night). It has been reported that many firms have not joined the Greenhouse Challenge because they do not see that their emissions are significant and many are unaware of emissions, in particular as they relate to indirect emissions from electricity production (AGO, 1999e: 41). For example, as noted by one energy consultant:

My experience has been that many companies do not draw the link between energy and greenhouse. Some do not count the electricity they purchase in their evaluation of their greenhouse gas emissions. Others just assume that all of the electricity is from hydroelectricity and so there are no greenhouse gas emissions to be accounted for. There is still a great need for basic education on energy and greenhouse issues.

There are some signs that Greenhouse Challenge members are taking action to influence parties outside their organization. It has been reported that approximately 5 per cent of Greenhouse Challenge participants have designated other participants as preferred suppliers, 5 per cent have specifically included greenhouse gas emissions as a consideration in tender documents, 23 per cent have marketed the benefits of the Challenge to suppliers and 10 per cent have undertaken actions to influence customers (AGO, 1999e: 44). While such external efforts are important, it is also important to recognize that the majority of firms are not taking such actions, and that at least some firms would have taken these sorts of actions anyway, for commercial reasons or as part of their broader corporate citizenship activities.

### **Innovation**

Under the Greenhouse Challenge, firms are free to define their own greenhouse targets and, as discussed above, it seems that many of the greenhouse emission reduction measures that have been proposed would have been carried out anyway, and that the Greenhouse Challenge does not appear to be acting as a driver for change or creating an impetus for dynamic effects or for innovation (Sullivan et al., 2000). This lack of impetus is reinforced by the limited focus of the Greenhouse Challenge verification process, which is on emissions inventories and the actions that have been reported as undertaken, not on whether all practicable actions have been undertaken or the reasons for not taking action. This emphasis means that the incentive that the verification process could provide (that is, to ensure that at least the agreed actions are implemented or, if not, that suitable reasons and explanations are provided) is missing.

### **Inclusiveness and Public Participation**

The Greenhouse Challenge has been designed as a government–industry programme, with oversight provided by a Joint Consultation Committee which is comprised of government and industry representatives. All of the parties participating in the JCC need to reach consensus before decisions can be taken on implementation and relevant policy issues.

There is no formal role for NGOs in the Greenhouse Challenge and the critical NGO views of the Greenhouse Challenge (see below) reflect this

exclusion. It is also pertinent to note that the design of the Greenhouse Challenge has precluded effective oversight. For example, Greenhouse Agreements are negotiated between firms and the AGO and the reports on the verification process are primarily qualitative. There are some signs that this is beginning to change with, for example, the requirements for participants to report on both emissions abatement and bulk totals of emissions. However, the Greenhouse Challenge does not meet many of the requirements for public participation outlined in Chapter 2. For example, not all stakeholders are involved in the Greenhouse Challenge (in particular, environmental NGOs are excluded from the process), there are no structures for controlling the discretionary power of the government (as the Joint Consultative Committee that oversees the Greenhouse Challenge only has industry and government representation), and there is an absence of sanctions for both Greenhouse Challenge participants and non-participants.

## **Acceptability**

### **Industry perspectives**

The Greenhouse Challenge has enabled Australian industry to demonstrate its concern about climate change while, at the same time, deflecting demands to take more serious action to cut emissions (Australia Institute, 2000: 9; Parker, 2002: 79–81). Australian industry has argued that the advantages of the Greenhouse Challenge (flexibility, good risk management, reduced costs and improved management practices, establishing processes for measuring, reporting and forecasting emissions at the enterprise level) provide the direction for greenhouse policy in the medium term (Australian Industry Greenhouse Network, 1999: 5–14; Cribb, 1998). Industry has, however, expressed concern regarding the lack of public recognition for the efforts of firms participating in the Greenhouse Challenge (AGO, 1999e: 58–9). That is, the emphasis of the Greenhouse Challenge on no regrets measures has been interpreted by the public as primarily being aimed at companies to ensure their competitive advantage, where the environmental benefits are of secondary importance. To quote one industry association representative interviewed for this research:

The public wants us to hurt and to see us hurting. They want to see us going beyond those activities that are justifiable in economic terms. Their argument is that the things we are doing now should have been done years ago. The problem is compounded by the lack of benefits associated with participation in the Greenhouse Challenge. We have had real problems in encouraging our members to join and, once joined, to stay.

A further concern for industry is that possible policy measures such as

emissions trading may disadvantage companies that take early action to reduce greenhouse gas emissions (see, for example Rose, 2004, commenting on the decision by 77 companies to withdraw from the Greenhouse Challenge in 2003). It has been argued that this uncertainty is a barrier to exploring further emission abatement opportunities under the Greenhouse Challenge (Australian Industry Greenhouse Network, 1999: 3). Interestingly (although this may reflect the evolution of industry positions on greenhouse policy rather than any specific change in the science or economics of greenhouse gas emissions), more recent industry research has argued that the potential for voluntary measures to enable Australia to meet the Kyoto Protocol targets is limited and has had only moderate success to date (Allen Consulting Group, 2000: 8). It has been argued that many of the 'easy wins' and no regrets measures will be achieved soon, and that the further reductions that can be made without economic penalty are likely to become progressively more difficult to find. It is unclear how this will affect industry's attitude to the Greenhouse Challenge. It may be that industry's support for the programme will be undermined or it may be that such statements are part of industry's negotiating strategy for the period beyond 2005, where the likelihood is that many industry sectors will want to increase their greenhouse gas emissions.

Despite the public statements of support for the Greenhouse Challenge, it also appears that industry itself is sceptical of the actual performance improvements being claimed by its members. Among the comments made by the industry association representatives interviewed for this research were:

The Greenhouse Challenge is really a bit of a joke. Lots of people have done the easy stuff. The only effect of the Challenge is to bring these forwards a bit. Our industry is struggling with the next generation of performance improvements as the easy wins are gone.

Basically, all the Greenhouse Challenge does is to codify what companies would be doing as part of their EMSs anyway. It's a bit more paperwork but if it helps us avoid carbon taxes or more regulations, its worthwhile.

### **Government/political perspectives**

As the primary sponsor of the Greenhouse Challenge, the Commonwealth government has consistently praised the programme's role in enabling Australia to meet its international greenhouse obligations (AGO, 1999e: 45; Parker, 1999: 68). There have been two formal evaluations of the Greenhouse Challenge, one a government funded evaluation (in 1999) and the other as part of a broader parliamentary inquiry (in 1999–2000) into Australia's greenhouse policy performance. The 1999 evaluation of the Greenhouse Challenge recommended that it be maintained as a key element of the government's greenhouse policy and that participation in the Challenge should remain voluntary (AGO, 1999e: 78–9). As the evaluation was conducted by a steering



group made up of representatives from the Australian Industry Greenhouse Network, the Australian Petroleum Production and Exploration Association, the Cement Industry Federation, the Department of Industry, Science and Resources, the Department of Agriculture, Fisheries and Forestry and the AGO, it is not unsurprising that the findings supported the continuation of the Greenhouse Challenge as a voluntary programme.

In contrast, the parliamentary inquiry (Parliament of the Commonwealth of Australia, 2000) was extremely critical of the effectiveness of the policy responses to date on greenhouse gas abatement (although, as government members were in the minority on the committee, it is not surprising that the report was so critical). The inquiry concluded that there were significant limitations in the government's industry partnership programmes, in particular that (a) the Greenhouse Challenge did not distinguish between the reduction of emissions from normal business improvements and emissions reductions as a result of government investment in specific programmes, (b) there were no penalties for companies that did not meet agreed targets, (c) sector-specific abatement targets or benchmarks were not specified, (d) only a small number of companies appeared to be meeting their forecast emissions abatement, and (e) there were no incentives for 'beyond no regrets' measures. It was recognized that the Greenhouse Challenge had raised expertise in emissions abatement, created CEO support for improving energy efficiency, stimulated the development and implementation of practical efficiency measures, prompted the development of methodologies for greenhouse gas abatement and provided a forum for discussions regarding the implementation of an emissions trading programme. The Commonwealth government rejected the criticisms of the Greenhouse Challenge, emphasizing that the programme was seen as an international role model for the inclusion of business in greenhouse gas abatement policies (Commonwealth of Australia, 2001).

### **Environmental groups**

Environmental groups have been critical of the Greenhouse Challenge, arguing that it is simply a public relations campaign for activities that would have happened anyway (Australia Institute, 2000: 7; ACF, 1999a). These groups have argued that the growth in emissions from Australian industry means that the government must move beyond voluntary approaches to abatement issues (ACF, 1999a). Concern has been expressed about the 'closed shop' and 'cosy relationship between government and industry' nature of the Greenhouse Challenge. Particular concern has been expressed about the emphasis of the Greenhouse Challenge on confidentiality, the closed nature of discussions around Cooperative Agreements and the general form of information distribution (that is, 'we will tell you' rather than dialogue or discussion) (Parliament of the Commonwealth of Australia, 2000: 367).



## **Law and Public Policy Issues**

### **Economic modelling: informing the policy debate**

One of the issues with the climate change debate is the difficulty in assessing the economic consequences of climate change and of climate change policy. In Australia, the Commonwealth government has relied on figures produced by the Australian Bureau of Agricultural and Resource Economics (ABARE) whose model (MEGABARE) predicted huge costs for Australia (both in terms of jobs and income) if the emission targets specified under the Kyoto Protocol were to be met. However, the credibility of the modelling has been undermined because ABARE raised over A\$1 million by offering companies the opportunity to sit on the steering committee for the development of the MEGABARE model. The firms that took advantage of this offer included Mobil, Exxon, BHP, Rio Tinto, the Business Council of Australia, the Australian Aluminium Council and Statoil (Beder, 1999: 122; Greenpeace, 1998; ACF, 1999b). Furthermore, the modelling results have been criticized for overestimating the costs and underestimating the benefits of emissions reductions (Parliament of the Commonwealth of Australia, 2000: 74–9).

### **The broader role of voluntary approaches in energy policy**

There is growing evidence that the contribution of voluntary approaches to achieving significant reductions in greenhouse gas emissions is likely to be relatively minor. A recent evaluation of different voluntary programmes for reducing greenhouse gas emissions concluded that the potential contribution of voluntary approaches to reducing greenhouse gas emissions was relatively minor (Krarup and Ramesohl, 2000). This research (see Table 6.2) identified seven broad categories of greenhouse policy measures, and assessed the impact of voluntary approaches on each of them.

Table 6.2 raises some important questions about greenhouse policy in Australia. The first is that the major policy options for significantly reducing greenhouse gas emissions all require significant investments (capital and operating costs, political support, cooperation) over the medium to long term. Second, the impact of voluntary approaches on the major policy options appears minor. That is, while voluntary approaches may assist in progressing some of the policy measures (in particular those that require communications, cooperation or support), significant changes require strong financial and regulatory drivers for change. Ultimately, the ability of voluntary programmes to contribute to achieving strong targets is dependent on the accompanying policy mix and the supporting framework. Third, in most energy-intensive industries, core processes have been continuously optimized and any significant changes in energy efficiency will depend on innovation in process technologies and ongoing research and development activities. The

*Table 6.2 The impact of voluntary approaches on greenhouse gas emissions*

Policy option	Requirements	Time-frame	Impact of voluntary programmes
Changes in product design, composition processed materials, resource use	Strategic commitment and long-term decisions with regard to a change of technical paradigms, process technologies and resource structures	Long term	Minor
Change of energy supply structure	Strategic commitment and long-term decisions with regard to energy infrastructure and fuel input	Mid/long term	Some effects but depend on the policy mix
Increased technology innovation	Strategic commitment and long-term research and development investment	Long term	Minor
Enhanced investment	Change in strategic and operative business goals as well as altered decision criteria and procurement processes	Short/medium term	Some, depending on policy mix
Enhanced technology diffusion	Increased communication, exchange of practical experience, dissemination of best practice, new network links, energy related cooperation	Medium term	Some, depending on existing cooperation and competition
Improved energy management	Integrated approach and systematic search for improvement options, changes in organizational routines, staff empowerment	Medium term	Some, depending on the design of the scheme
Awareness and motivation	Mobilization of firm actors, provision of information, know-how and expertise, continuous discussion of the issue	Short/medium term	Some effects

*Source:* Krarup and Ramesohl (2000: 39).

consequence is that while voluntary programmes may foster single projects or research initiatives, they are unlikely to change underlying strategies and pressures for energy efficiency. This is of particular relevance in the Australian context given the major contribution of primary industry and power generation to Australia's greenhouse gas emissions, and given that technological change in such industries is driven both by technological developments and by the rate of retirement of existing plant and equipment (which, for many such industries, can be over a period of 20–30 years). In industries such as mining and minerals processing, the measures to change material composition, close resource cycles and reduce material flows play the primary role in reducing energy consumption and greenhouse gas emissions. These measures are mainly triggered by cost reduction pressures or by distinct environmental regulations, and voluntary measures are unlikely to induce significant achievements on their own (Krarup and Ramesohl, 2000: 40). As noted by various industry representatives:

Strategic investments are decided on a 'higher' [senior management] level. Commitments made in a voluntary programme such as the Greenhouse Challenge are unlikely to influence these investment decisions. The exceptions would be where the international industry had signed up (or was forced to sign up) to an international standard.

The Greenhouse Challenge does not have a major influence on our strategic management decisions, such as whether or not to build a new plant.

The reality is that our major capital investments are intended to last for 20–30 years, if not longer. The Greenhouse Challenge is a very minor influence on such decisions. However, the broader debate around climate change and the potential for emissions trading and energy taxes are major influences. We see that new plant is the opportunity for us to make a step change in performance, due to installing more efficient and more modern equipment.

We look closely at greenhouse issues on all new developments. We, as a matter of policy, take greenhouse conservative decisions in situations where it is feasible to do so.

### **The energy supply structure**

Changes in the energy supply structure represent an important option to reduce total greenhouse gas emissions. In Australia, the recent reforms of the energy market to introduce a wholesale electricity market across Australia have led to an excess supply of electricity (Commonwealth of Australia, 2000a: 47). The Commonwealth government has argued that energy market reform has reduced some barriers to the penetration of new energy supply technologies (Commonwealth of Australia, 2002: 46–8). However, the data that are available indicate that the primary effect of these reforms has been to increase

the carbon intensity of electricity generation (through favouring low-cost brown coal power producers) (Parliament of the Commonwealth of Australia, 2000: 152–62; Commonwealth of Australia, 2000a: 47; AGO, 2004b: 22–6). The deregulation of the electricity market has also enabled many large customers to negotiate extremely low electricity prices. For example, it has been reported that an electricity tariff of less than A\$0.03 per kilowatt-hour has been agreed to enable a proposed aluminium smelter project in Queensland to go ahead (Wilson, 2001). The relatively low price of electricity in Australia has been a barrier to effective demand-side management (as the economic benefits of energy saving are not sufficiently clear-cut to encourage energy saving measures) and it has been suggested that the rate of improvement in end-use energy efficiency in Australia over the past decade has been about half the OECD average (Parliament of the Commonwealth of Australia, 2000: 183–4; Allen Consulting Group, 2003).

Energy supply in Australia is not only driven by economic pressures but also by state and territory perspectives on security of energy supply and demands for local employment and local development. For example, three coal-fired power stations, with a total generating capacity of approximately 2000 MW, have recently been approved for Queensland (Parliament of the Commonwealth of Australia, 2000: 131). These power stations will not only increase overall greenhouse gas emissions but will also lead to the price of electricity falling further and, therefore, will act as a further barrier to the development of renewables and alternative sources of energy. For example, as noted by Paul Flanagan of Pacific Power, Pacific Power's plans to build a 400 MW gas-fired power station had been shelved as a consequence of the low market prices for electricity and the increased coal generating capacity in Queensland (Parliament of the Commonwealth of Australia, 2000: 157).

The Commonwealth government has acted to address (at least partially) this market failure by requiring electricity suppliers and large purchasers to increase the quantity of renewable energy purchased by 2 per cent by 2010 (AGO, 2000f),<sup>8</sup> as well as providing funding for the commercialization of renewable energy technologies (Commonwealth of Australia, 2002: 51–3). The mandatory purchasing requirements for renewables may involve net economic costs for companies (as the costs of renewables may be higher than conventional electricity sources) and hence goes beyond the no-regrets approach.

### **Regulatory capture and free-riders**

The Greenhouse Challenge has also had some important adverse consequences for the law and policy process. The most important (as with many voluntary approaches) are the related questions of regulatory capture and

free-riders. On regulatory capture, Australian business has used the existence of the Greenhouse Challenge to argue against stronger policy approaches to addressing greenhouse gas emissions. For example, proposals for an Australian emissions trading system have now been shelved indefinitely.

Two distinct forms of free-riding have occurred. The first is that many organizations have not signed up to the Greenhouse Challenge at all – the fewer than 800 organizations that presently participate represent a small fraction of the total possible number of organizations that could have joined. The second is that the absence of consistent measures of performance and for public reporting means that it is not possible to assess the credibility of the commitments that have been made by participating organizations. Thus, while participating organizations may comply with the formal requirements of the Greenhouse Challenge (through preparing inventories, reporting and so on), it is not possible to tell whether all possible greenhouse abatement measures have been adopted or to assess the credibility of the commitments that have been made under the programme.

### **Concluding Comments**

By its own measures, the Greenhouse Challenge has been successful. The measures that have been adopted have enabled many companies and industry sectors to stabilize their greenhouse gas emissions. The flexibility provisions in the Greenhouse Challenge have been welcomed by industry as enabling cost-effective approaches to greenhouse gas emissions abatement to be implemented. The Greenhouse Challenge also appears to have provided a range of important soft effects, in particular making greenhouse and climate issues a part of management decision-making processes. The Greenhouse Challenge has also changed to address some of the criticisms that have been made by environmental NGOs. These changes include extending the reporting requirements for participating organizations and improving verification processes and reporting.

Despite these positive outcomes, the overall effectiveness of the Greenhouse Challenge remains questionable. It appears that the primary effects have been to bring forward some projects and to enable firms to identify 'easy wins' or projects with very short payback periods. Ambitious targets to reduce greenhouse gas emissions are not being set at the organizational level and the Greenhouse Challenge does not provide strong incentives for significant reductions in greenhouse gas emissions.

The Greenhouse Challenge can be seen as a reasonable response to the UNFCCC. However, the significant increases in Australia's greenhouse gas emissions since 1990 mean that, short of a dramatic change in the way in which Australia uses energy, Australia will either not meet its targets under the

Kyoto Protocol or will rely on the credits from land use and forestry to meet its specified targets.

Finally, the Greenhouse Challenge is only one of the policy measures that have been adopted. The weaknesses of the Greenhouse Challenge need to be seen in the context of the weaknesses of the policy framework more generally, in particular the lack of government willingness to consider policy measures that would adversely affect Australian industry. Ultimately, to effect significant changes in Australia's greenhouse gas emissions profile will require that the broader greenhouse policy is significantly strengthened.

## NOTES

1. United Nations Framework Convention on Climate Change (UNFCCC) 1992, *ILM*, Vol. 31, p. 849, Article 1(2).
2. Kyoto Protocol to the United Nations Framework Convention on Climate Change 1997, *ILM* (1998), Vol. 37, p. 22.
3. These measures were agreed between the Commonwealth government and the Australian Democrats as part of the negotiations around the introduction of a goods and services tax in 1999.
4. Further information on GGAP can be found at the Australian Greenhouse Office website, [www.greenhouse.gov.au](http://www.greenhouse.gov.au) (last visited 25 July 2004).
5. Cooperative Agreements can be viewed at [www.greenhouse.gov.au/agreements](http://www.greenhouse.gov.au/agreements).
6. For further information on AGO activities and publications, see the AGO's website [www.greenhouse.gov.au](http://www.greenhouse.gov.au) (last visited 25 July 2004).
7. See further the SEDA website [www.seda.nsw.gov.au](http://www.seda.nsw.gov.au) (last visited 15 July 2004).
8. The measure will be implemented through the Renewable Energy (Electricity) Act 2000 and the Renewable Energy (Electricity) (Charge) Act 2000, supported by the Renewable Energy (Electricity) Regulations 2000.

## 7. The Australian Minerals Industry Code for Environmental Management

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### THE INTERNATIONAL POLITICAL ECONOMY OF MINING

#### **The impacts of mining**

Mining is the world's fifth largest industry and a quarter of all 'developing' or 'post-communist' countries can now be described as 'mineral economies' (that is, where at least 10 per cent of national income or 40 per cent of export earnings are derived from mining).<sup>1</sup> Although the mining industry is an important economic sector in many countries, it has been heavily criticized for its impacts on the environment, human rights and social protection (Oxfam Community Aid Abroad, 2003; Evans et al., 2001). These criticisms have been exacerbated by the fact that many countries have removed or weakened legislation to protect local resources, employment, environments and cultures in order to increase their appeal to potential investors (Rosenfeld Sweeting and Clark, 2000: 10).

Mining operations are usually 20 to 40 years in duration, and environmental impacts such as acid mine drainage and land contamination frequently continue long after mining operations have ceased. The environmental impacts of mining can include massive land disturbance, the removal of vegetation, siltation, increased demand for water, physical pressures on the environment, soil and water contamination, noise and visual impacts (World Bank, 1998; Rosenfeld Sweeting and Clark, 2000: 6–18; Mineral Policy Centre, MPC, 2001a; MMSD, 2002: 232–67; Da Rosa and Lyon, 1997: 29–92; Hancock and Roarty, 2002: 43–4). The impacts associated with specific mining operations are highly dependent on site-specific factors such as the size of the mine, the method of mining,<sup>2</sup> mineral characteristics, geography and climate,<sup>3</sup> and environmental management practices and processes.

#### **Changing opinions on mining**

Until recent times, mining was seen as a preferential land use, where external effects (for example, environmental impacts) were assumed to be a natural and unavoidable consequence of the extraction and processing of needed supplies (Cordes, 1997). As the environmental damage associated with mining has

become clearer, there has been increasing controversy regarding whether mining projects should be allowed to proceed and under what conditions. Public attitudes have changed and these external effects are, increasingly, regarded as unacceptable (Hinde, 2000). For example, one commentator on the mining industry (quoted in Gunningham and Sinclair, 2002: 135) has noted that: 'The image of abandoned mines, tailings dumps, waste-rock piles, and abandoned communities has significant resonance with the general public.'

In recent years, the mining industry has been the subject of a range of campaigns by NGOs and other stakeholders, including campaigns (a) to prevent the World Bank investing in extractive industries, (b) to prevent submarine tailings disposal, (c) to ban the use of cyanide, (d) against specific companies (for example, Rio Tinto, Newmont), and (e) against specific mined products (for example, lead, diamonds) (MPC, 2001b).

From the mining industry's perspective, there are both individual and collective dimensions to these debates. Mining companies compete mainly on the basis of costs (as prices are set by the world markets). These costs are, to a large extent, determined by the specific characteristics of mining sites. Hence, average production costs depend on the quality of a company's deposits portfolio, and mining companies compete globally for the most productive deposits. These deposits are attributed in the form of operation licences by public authorities, and environmental performance has become an increasingly important factor in the allocation of these licences (Bomsel et al., 1996; MMSD Australia, 2002: 31). The experience of the Australian mining company BHP (now BHP Billiton) illustrates the point. In mid-2000, BHP wished to reassure indigenous communities at its diamond project Ekati in Canada that it was well regarded by people at Ok Tedi in Papua New Guinea. This claim was disputed when, according to the lawyer acting for the Ok Tedi landowners, his clients had stated that BHP ought to 'piss off out of the country never to be seen again' (Styant-Browne, 2000).

Environmental performance is also a collective issue for the industry, as the public tends to judge the performance of the industry by the performance of its weakest members (MMSD Australia, 2002: 53). It is frequently the failures of the industry rather than the successes that generate the greatest media coverage and the reputation of the industry as a whole has been marred by the highly publicized poor performance of individual operators (Sullivan and Frankental, 2002: 87–8).

These debates have increased the pressure for the tighter regulation of mining developments. This is seen as affecting the mining industry in a number of ways. The first is that regulation may impose additional costs on the industry, through reducing operational flexibility or through the imposition of additional performance or operational requirements (Cordes, 1997: 27). The second is that regulation may be a threat to the long-term well-being of the



industry through affecting the demand for the industry's products or through restricting access to specific markets. For example, the regulatory requirements that apply to the metals industry's product life-cycles include the environmental assessment of exploration and development, occupational health and safety requirements, regulations covering new chemicals and products, poison control, air, water, soil standards, public reporting on releases, transport, product standards, storage and disposal of wastes, national targets for metals recycling and reuse, labelling, risk reduction programmes, export controls, accident prevention and environmental management and reporting requirements (MCA, 1997: 7–10). The third is that the industry's social licence to operate, in particular its ability to access mineral resources and land, may be undermined (Hancock and Roarty, 2002: 20).

### **Industry responses**

Traditionally, the mining industry did little to promote improved environmental or social practices across the industry (Brerton, 2002: 4). However, the industry (at least those that wish to be seen as leaders or as socially responsible) has increasingly recognized the need for collective worldwide strategies to respond to these pressures for regulation, to enable the industry to have an increased influence on the policy development process and to protect its social licence to operate. In 1998, some of the world's largest mining companies established the Global Mining Initiative to 'identify how mining and the minerals industry can best contribute to the global transition to sustainable development'. In 1999, the International Institute for Environment and Development, was commissioned to conduct a two-year study (the Mining, Minerals and Sustainable Development (MMSD) Project) to understand how the mining sector, as a whole, could make the transition to sustainable development.<sup>4</sup>

The findings of the MMSD Project were released in 2002 (MMSD, 2002). Nine key challenges were identified for the international mining industry: (i) the overall viability of the industry; (ii) the control, use and management of land; (iii) the potential contribution of the mining industry to economic development; (iv), providing benefits at the local level; (v) the environment; (vi) the adoption of an integrated approach to using minerals; (vii) access to information; (viii) artisanal and small-scale mining; and (ix) governance. Recommendations were made on how to address each of these challenges, including encouraging the industry to work together, to form associations, to develop and implement systems, and to establish initiatives on issues such as product stewardship, sustainable development and reporting. However, specific performance measures were not proposed for the industry.

The International Council on Mining and Minerals (ICMM) has been established to take the recommendations of MMSD forward and to promote a

*Table 7.1 ICMM Sustainable Development Framework: key principles*

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1. Implement and maintain ethical business practices and sound systems of corporate governance.
  2. Integrate sustainable development considerations into corporate decision-making processes.
  3. Uphold fundamental human rights and respect cultures, customs and values in dealing with employees and others affected by the industry's activities.
  4. Implement risk management strategies based on valid data and sound science.
  5. Seek continual improvement of health and safety performance.
  6. Seek continual improvement of environmental performance.
  7. Contribute to the conservation of biodiversity and integrated approaches to land management.
  8. Facilitate and encourage responsible product design, use, re-use, recycling and disposal of the industry's products.
  9. Contribute to the social, economic and institutional development of the communities in which the industry operates.
  10. Implement effective and transparent engagement, communication and independently verified reporting arrangements with the industry's stakeholders.
- 

*Note:* Further detail on the principles can be found at [www.icmm.com](http://www.icmm.com) (last visited 20 July 2004).

sustainable development agenda for the industry as a whole. The ICMM has developed a Sustainable Development Framework that comprises ten key principles (see Table 7.1). The industry members of ICMM have committed to implementing the framework and to measuring performance. However, the framework does not have any formal enforcement provisions.

## THE AUSTRALIAN MINERALS INDUSTRY CODE FOR ENVIRONMENTAL MANAGEMENT

### **Driving forces for the code**

In 1995, the Commonwealth Environment Protection Agency indicated that it was considering developing a code of conduct for Australian companies operating abroad. This proposal was driven by the heavy criticisms of the behaviour of the Australian mining industry, in particular in less developed countries (Atkinson, 1998; Wells, 2001). In response, the Minerals Council of

Australia (MCA) announced that it would develop its own voluntary code of conduct. In December 1996, the MCA launched the Australian Minerals Industry Code for Environmental Management ('the Code') (MCA, 1996). In an interview conducted for this research, a mining industry representative noted:

The Code evolved out of the controversies around the Australian mining industry in the early to mid 1990s, in particular as a consequence of Ok Tedi. The Australian Conservation Foundation put together a code of practice for mining companies in Papua New Guinea, but did not involve the industry in the development of the code. The mining industry said 'No' to ACF's code. However, at around the same time, the Australian government expressed its interest in a code of conduct for the mining industry. As a consequence of these pressures, the industry decided to be proactive and to develop its own code, in consultation with stakeholders.

The Code was seen as a means for the mining industry to demonstrate its commitment to excellence in managing the environmental aspects of its operations (MCA, 1999a). The long-term benefits of developing and implementing the Code were seen as improving the industry's environmental performance, enabling the industry to earn the public's trust, maintaining the industry's 'licence to operate' and contributing to shareholder value. The short-term benefits were seen as enabling the minerals industry to demonstrate a consistent approach to environmental management, helping establish benchmarks of excellence within the industry, promoting industry achievements, stimulating community consultation, demonstrating due diligence in environmental management and increasing stakeholder confidence (MCA, 1999a). The Code was subsequently reviewed in 1999 and a revised Code was issued in February 2000 (MCA, 2000).

In 2002, the MCA announced its intention for a substantial overhaul of the Code, in order to provide an operational framework for sustainable development and to develop a series of common performance assessment criteria against which signatory companies are expected to report. The aim was that a revised Code would be published and open for signature in 2004 (MCA, 2002). The new Code is discussed in more detail below.

### **Code objectives**

The stated aim of the Code is to achieve continual improvement in the environmental performance and accountability of the Australian minerals industry through the implementation of the Code (MCA, 2000: 4). It contains seven principles (see Table 7.2) that provide a framework for the industry's environmental management efforts. However, the Code does not prescribe specific environmental practices or set minimum standards, with the exception that signatories commit to compliance with all statutory requirements as a

*Table 7.2 Principles of the Australian Minerals Industry Code for Environmental Management*

Element	To be achieved through
Accept environmental responsibility	<ul style="list-style-type: none"> <li>● Demonstrating management commitment.</li> <li>● Allocating clear roles, responsibilities, accountabilities and resources.</li> <li>● Providing necessary information, performance targets, training, resources and support.</li> </ul>
Strengthen the industry's relationships with the community	<ul style="list-style-type: none"> <li>● Fostering openness and dialogue with employees and the community.</li> <li>● Respecting cultural and heritage values and facilitating cross-cultural awareness and understanding.</li> <li>● Consulting with the community on the environmental consequences of the industry's activities.</li> <li>● Anticipating and responding to community concerns, aspirations and values regarding the industry's activities.</li> </ul>
Integrate environmental management into the way the industry works	<ul style="list-style-type: none"> <li>● Establishing environmental management systems consistent with current standards.</li> <li>● Incorporating environmental and related social considerations into the business planning process along with conventional economic factors.</li> <li>● Applying risk management techniques on a site-specific basis to achieve sound environmental outcomes over the life of the project.</li> <li>● Developing contingency plans to address any residual risk.</li> <li>● Ensuring resources are adequate to implement the environmental plans during operations and closure.</li> </ul>
Minimize environmental impacts	<ul style="list-style-type: none"> <li>● Assessing environmental and related community effects before and during exploration and project development.</li> <li>● Evaluating risks and alternative exploration and mining project concepts, taking into account community views and subsequent land-use options.</li> <li>● Adopting a proactive and cautious approach to environmental risks throughout the life of each operation.</li> <li>● Applying ecological principles that recognize the importance of biodiversity conservation.</li> </ul>

*Continued overleaf*

*Table 7.2 Continued*

Element	To be achieved through
Minimize environmental impacts (continued)	<ul style="list-style-type: none"> <li>● Planning for closure in the feasibility and design phases of a project and regularly reviewing plans to consider changes in site conditions, technology and community expectations.</li> </ul>
Encourage the responsible production and use of the industry's products	<ul style="list-style-type: none"> <li>● Employing production processes that are efficient in their consumption of energy, materials and natural resources.</li> <li>● Minimizing wastes through recycling, and by reusing process residues.</li> <li>● Safely disposing of any residual wastes and process residues.</li> <li>● Promoting the safe use, handling, recycling and disposal of the industry's products through an understanding of their life-cycle.</li> </ul>
Continually improve environmental performance	<ul style="list-style-type: none"> <li>● Setting and regularly reviewing environmental performance objectives and targets that build upon regulatory requirements and reinforce policy commitments.</li> <li>● Monitoring and verifying environmental performance against established criteria so that progress can be measured.</li> <li>● Benchmarking against industry performance and addressing changing external expectations.</li> <li>● Researching the environmental aspects of the industry's processes and products and developing better practices and innovative technologies.</li> </ul>
Communicate environmental performance	<ul style="list-style-type: none"> <li>● Identifying interested parties and their information needs.</li> <li>● Providing timely and relevant information including publication of annual public environment reports on the industry's activities and environmental performance.</li> <li>● Encouraging external involvement in monitoring, reviewing and verifying the industry's environmental performance.</li> <li>● Continually reviewing and evaluating the effectiveness of the industry's communications.</li> </ul>

Source: MCA (2000: 6–9).

minimum and to continual improvement by progressively implementing the Code's principles (where the rate of continual improvement is defined by the individual companies) (MCA, 2000: 5, 10). The implementation of the Code is not seen as an end in itself but as a tool for achieving the objectives of improving environmental performance and communicating that improved performance to stakeholders (MCA, 1999a).

### **Code requirements**

Companies that commit to the Code are required to (a) progressively implement the Code, (b) produce an annual public report within two years of registration, (c) complete an annual Code Implementation Survey to assess progress against the implementation of the Code principles, and (d) verify the survey results by an accredited auditor at least once every three years (MCA, 2000: 3, 10–11; MCA, 2001a; MCA, 2001b).

When the Code was first established, public environmental reporting was seen as critical to establishing its credibility and to demonstrating the industry's commitment to community consultation (MCA, 1996). The industry stated that it expected that these reports would be used proactively to provide information on issues of concern to stakeholders, to promote the reporting companies' achievements and to provide a benchmark for demonstrating continual improvement towards excellence in environmental management (MCA, 1998a). Many of the Code signatories have included their Code Implementation Survey results in their annual reports (see, for example, Consolidated Rutile Limited, CRL, 2000; Thiess, 2000). The Code secretariat (the MCA) is expected to issue an industry-wide analysis of performance against the Code principles, based on the Code Implementation Survey returns.

All exploration, mining and minerals processing companies and contractors are eligible to become signatories to the Code. The Code is intended to apply to all of a signatory company's activities, wherever they operate, as well as to the relevant activities of contractors engaged by the signatories (MCA, 2000: 10). In practice, however, the scope of implementation of the Code varies, with some companies applying it to all of their international operations and others only applying it to their Australian and Pacific operations (Brerton, 2002: 6). Signatory companies are also required to 'strongly encourage' the application of the Code principles to operations in which they hold a non-controlling interest (MCA, 2000: 10).

Initially, being a signatory was not a prerequisite for membership of the MCA (MCA, 2000: 10), and industry peer pressure was seen as the primary means of enforcement (Burton, 1999c). However, the industry recognized that it needed to explore options to address poor performers and non-compliance with the Code and, consequently, in January 2002, the MCA announced that

signing the Code would be a prerequisite for membership of the MCA. The MCA has stated that it has de-listed some companies from the Code but the names of these companies are not publicly available (Brerton, 2002: 6). Signatories may withdraw their commitment to the Code at any stage. The companies committing to the Code are recorded on a public register maintained by the MCA.<sup>5</sup> As at 1 January 2003, 39 companies were signatories to the Code. These signatories covered over 300 operations and represented 92 per cent of mining and minerals production in Australia (MCA, 2002: 4). However, many smaller mining companies have declined to participate. Even though the MCA has encouraged these companies to sign on to the Code, the MCA has also recognized that many of these companies tend not to have an active involvement in their state or territory mining association, let alone with national bodies such as the MCA. That is, the MCA is of the view that the majority of the companies that are not signatories to the Code are unlikely to see the benefits (to them) of active engagement in collective action on environmental issues.

The MMSD Australia Project noted that the MCA is dependent on the fees paid by its members. The consequence is that there is a general perception that the MCA's ability (or willingness) to provide leadership and influence change in the industry is extremely constrained (MMSD Australia, 2002: 93). This issue was raised by some of the regulatory bodies interviewed for this research:

The mining industry associations can't really act as effective enforcement agencies as they are subject to their members' expectations and demands. There is always going to be a need for effective regulation that is implemented and enforced by an independent agency.

The critical issue with self-regulation is who actually does the checking and review of performance, and who ensures compliance.

We know that when push comes to shove, the industry will act to protect itself and its members. There is no way that the Minerals Council would ever do anything that was against the interests of one of its members. The industry sees itself as being under siege from environmentalists and greenies. The last thing they want is the [Minerals] Council on their case as well.

The release of the revised Code in 2000 was accompanied by the establishment of an External Environmental Advisory Group to provide advice on progress towards implementing the Code, to identify issues of concern and to prepare an annual report detailing progress towards its implementation (MCA, 2000: 10–11; Burton, 2001b). The group included representatives from government, community and environmental NGOs, and academia, and issued its first (and only) report in 2001 (External Environmental Advisory Group,

2001). However, the group did not have the power to hear complaints or to take action against companies failing to meet their Code obligations. This limitation was recognized by the MMSD Project which stated that the establishment of an independent complaints mechanism would send ‘a powerful message of the industry’s commitment to play a positive role in society and to respect the rights of stakeholders and host communities’ (MMSD Australia, 2002: 65).

The Code is supplemented by specific guidance on environmental management in the industry in documents such as Code Guidance Notes (MCA, 1998a, 1998b, 1998c, 1999c), the series of Best Practice Environmental Management in Mining modules<sup>6</sup> and environmental management standards such as the ISO14000 series, and technical guidance and other information from universities and other research centres.

## **Code Performance 1996–2002**

The following discussion of the performance of the Code focuses on the period from 1996 (when the first version was released) to 2002. The proposals to revise the Code, and the follow up to the MMSD process, have changed its role, including a change in the priority assigned to the Code in helping define the industry’s priorities and objectives. Consequently, at the time of writing (August 2004), it is too early to draw conclusions on how these revisions have affected its operation.

## **Environmental Effectiveness**

### **Data availability**

The environmental performance of individual companies and of different mine sites is highly dependent on site and operating characteristics. Consequently, the development of formal general rules regarding mine operations or the development of effective and valid comparative indicators is widely considered to be extremely difficult (Bomsel et al., 1996: 13; Hancock and Roarty, 2002: 49–50), and specific targets for individual facilities or for the industry as a whole have not been developed by the industry. Individual companies have, therefore, developed their own, company-specific performance indicators and performance targets, making it difficult to compare companies’ social and environmental performance (MMSD Australia, 2002: 52). While there have been a number of industry initiatives, most recently the efforts to work with the Global Reporting Initiative to develop a mining-specific workbook (or guidance for reporting), there is as yet no real consensus on the core performance indicators that should be used for reporting. There are some signs of change in this regard with the MCA’s 2002



Sustainable Development Report providing aggregated data on the industry's performance against specific performance indicators such as emissions of greenhouse gases, sulphur dioxide, carbon monoxide and particulate matter, including some data on trends (these data are discussed further below).

The reluctance of the mining industry to assess the quality of the reports produced has been criticized by NGOs (Rae, 1999). In 1999 and 2000, the World Wildlife Fund (WWF) reviewed the public environmental reports produced by individual companies to assess their usefulness to stakeholders wishing to assess a company's social and environmental performance (WWF, 1999, 2000). The assessment process focused on the reports themselves rather than on the environmental performance of the industry or of individual companies. In an interview for this research, a WWF representative commented:

While we are able to assess the reports, we simply do not have the capacity or resources to look at the industry's impacts in a systematic manner. We (along with all of the other NGOs) rely on identifying poor performers and using this to argue that the industry as a whole needs to raise its game.

Overall, WWF's assessment was that, of the 32 reports produced by Code signatories in 2000, only 15 could be considered as scoring a 'pass' or better (WWF, 2000: 7). WWF was of the view that there had been very little improvement in the quality of the reports since its previous assessment, although it is important to recognize that there were only 11 reports available in 1999 (of which five were considered as scoring a pass). Therefore, a more positive conclusion could be that ten companies had improved their reporting from 'inadequate' to 'pass', reflecting the growing industry knowledge and expertise in reporting. Furthermore, given that 21 of the reports considered in 2001 were from companies that had not previously reported, these limitations may be considered as part of the necessary evolution of reporting processes within individual companies. WWF identified a number of common themes across the reports. First of all, none of the reports received a 'pass mark' for external verification. WWF noted that, while many of the reports contained statements from an external auditor, few of these statements provided sufficient commentary on the company's environmental or social performance. The mining industry subsequently identified the issue of verification as an important issue in ensuring the credibility of its reporting (Solomon, 2000: 92; MCA, 2001e; MMSD Australia, 2002). One of the initiatives that is presently (August 2004) being investigated by the industry is the potential for the certification of the social and environmental performance of individual mines (see WWF, 2001; Rae et al., 2002; Mining Certification Evaluation Project, 2003). Second, WWF noted that few of the reports could demonstrate that organizations had a

strategic approach to stakeholder and community relations. Third, WWF observed that many companies seemed to ignore the importance of setting and reporting on environmental targets and 13 of the 32 reports reviewed had no targets at all. Finally, WWF commented that most of the reports reviewed contained sufficient detail to enable an assessment to be made of current levels of compliance and the environmental and social objectives that the company had set for itself.

The focus of collective reporting under the Code does not address these issues of quality. The aim of the Code Implementation Survey is to communicate the industry's performance against the Code, rather than against specific environmental indicators (MCA, 2001a). In the 2000–2001 survey, the MCA noted that the principles relating to accepting environmental responsibility, minimizing environmental impact and communicating performance to the public were the most advanced, with the highest scores being reported for systems-type aspects (possibly reflecting the growing adoption of ISO14001 by the industry) (MCA, 2001e). In its 2001 report, the External Environmental Advisory Group, reflecting the WWF analysis, noted that the participating companies are allowed to assess their own performance, the survey does not allow the reasons for differences between companies to be assessed, and the survey does not explicitly measure environmental performance (External Environmental Advisory Group, 2001). The EEAG however did argue that these issues should be addressed over time as the survey evolves. It is also pertinent to note that the MCA's 2002 Sustainable Development Report (MCA, 2002) did provide a starting point by providing aggregated performance data for the industry as a whole.

### **Environmental performance: compliance and industry-defined targets**

The majority of the industry's environmental reports explicitly assess performance against regulatory requirements. While many of the companies have reported improved environmental performance, it was also clear that, even three or four years after the Code was introduced, the industry had ongoing issues with regulatory compliance. For example, BHP was fined for 16 non-compliances in 1999/2000, but noted that even though the number of fines was greater than in 1997/1998, the number of significant incidents had reduced (BHP, 2000: 56). In contrast, MIM reported that it had had no fines or prosecutions in 1999/2000 (MIM, 2000: 9). This raises broader questions regarding whether the number of prosecutions represents a valid measure of regulatory compliance, as MIM reported that it had 1053 'incidents' over the same period (MIM, 2000: 10). MIM noted that 25 per cent of these were minor non-conformances with no environmental impact, 63 per cent were minor incidents with minimal potential for environmental impacts outside the immediate area, 11 per cent were moderate localized environmental impacts

(possibly off MIM-managed areas) and 1 per cent could have led to significant medium-term effects, possibly off MIM-managed areas (MIM, 2000: 10). Similarly, while Consolidated Rutile Limited (CRL) reported that it had received one order to comply and one fine (that is, two regulatory compliance issues), it had also had one incident that led to environmental impact of state or national significance, three incidents that may or could have led to impacts of regional significance and six incidents that may or could have led to impacts of local significance (CRL, 2000: 18–19).

Apart from the question of whether prosecutions are a complete measure of regulatory performance, it is clear that by 2002 the mining industry had not reached the point where regulatory compliance could be assured. However, the fact the majority of the companies reporting are explicitly communicating their regulatory performance and, in most cases, describing the measures taken to ensure compliance, is a sign that the industry sees regulatory compliance as a necessary part of its overall environmental management efforts. As argued by one mining industry association representative:

The Code is not intended in any way to replace regulation. Rather the Code is complementary to legislation and, through the reporting process, provides another incentive for ensuring regulatory compliance.

The information provided in the industry's public environmental reports suggests that the Code signatories had reasonable success in meeting the targets that they had defined for themselves. For example, BHP reported that it had met its targets on reducing hazardous waste, general waste and oil and fuel spills, but that it had not met its targets on eliminating emissions of ozone-depleting substances or on regulatory compliance (BHP, 2000: 4). BHP also provided a discussion of the reasons why its various targets had or had not been met (BHP, 2000: 47–53). In contrast, CRL reported that it had only met 42 per cent of its targets, but did not provide a detailed explanation of the reasons why the targets had not been met or of the significance of the targets that had not been attained (CRL, 2000: 4). CRL argued that the remaining targets had simply been deferred until 2001 and noted that it intended improving 'employees' awareness of their responsibilities for meeting environmental targets and setting realistic completion dates' (CRL, 2000: 4).

In terms of environmental performance, the industry appeared to have been successful at decoupling greenhouse gas emissions and energy from production (see, for example, MIM, 2000: 8–9; Alcoa, 2000: 27; Nabalco, 2000: 27; BHP, 2000: 30–31). However, even though the efficiency with which the industry used energy was improving, overall energy consumption continued to increase as a consequence of rises in the industry's rate of production.

While the industry's environmental reports provide a substantial amount of

information (in particular on regulatory compliance and site environmental performance), making an overall assessment of environmental performance based on the information in public environmental reports is difficult. In part, as discussed above, this is due to the limitations in the reports that have been produced to date. The difficulties also reflect the complexities of comparing different sites (as discussed above, environmental impacts are a very site-specific issue) or different companies. While the reports produced by Code signatories included site-specific and overall targets (see, for example, Pasminco, 2000; BHP, 2000), there was no assessment of how challenging these targets were or whether the targets represented a significant change from business as usual. A further issue is that Code signatories are not required to report on all of the issues that are relevant to their operations (or to identify those issues that are not relevant or have not been considered). The MCA's 2002 Sustainable Development Report (MCA, 2002) provided some information on the aggregate environmental performance of the industry as a whole. For the mining sector as a whole, greenhouse gas emissions per unit of production have remained roughly constant over the period 1999–2002, although total emissions have increased by approximately 25 per cent, broadly in line with the increases in production from the industry over this period. For other pollutants, the industry's performance has been somewhat mixed, with significant reductions in emissions of sulphur dioxide (25 per cent) but significant increases in emissions of carbon monoxide and particulate matter.

These issues are further complicated by the inevitable sales and purchases that make year-on-year comparisons difficult. For example, while BHP met its targets for reductions in greenhouse gas and energy intensity, these targets were met, in part, through the sale and disposal of sites or operations with higher greenhouse gas and energy intensities (BHP, 2000: 4). As noted by industry representatives interviewed for this research:

The Code does not impose specific performance requirements. While the implementation of the Code within companies does raise awareness of environmental issues, it is not possible to point to specific outcomes that have been achieved as a direct consequence of the Code.

Even though we lobbied against the National Pollutant Inventory [a public register of emissions to air, water and land of pollutants and wastes from industry], it does have the great advantage of requiring all companies to report on a consistent basis and allowing direct comparisons to be made between companies.

### **Environmental performance: accidents and incidents**

The Australian mining industry has been criticized because of the industry's involvement in a series of major environmental incidents. Some of the reported incidents involving Australian companies (or their joint ventures and/or partner companies) over the period 1996–2002 are detailed in Table 7.3

(Code signatories) and Table 7.4 (non-signatories).<sup>7</sup> While some of these may be seen inevitable consequences of even the best run mining operations, NGOs have argued that they represent failings of the industry's self-regulatory initiatives. For example, Oxfam Community Aid Abroad argued that there is 'an increasing incidence of reports of problems caused by Australian mining companies in developing countries. An increasing number of complaints and

*Table 7.3 Examples of incidents and accidents involving Code signatories (1996–2002)*

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- *Aurora Gold* Human rights abuses and environmental pollution in Kalimantan, Indonesia.<sup>a</sup>
  - *BHP* Long-term impacts on livelihoods and the environment of over 30000 landowners at Ok Tedi.<sup>b</sup> The consequences of mining activities (in particular, the direct disposal of the mine's waste rock and tailings into the Fly and Ok Tedi river system) have included a reduction in baseline fish numbers in the river system of up to 90 per cent, causing 470 square kilometres of forest to die back (expected to increase to at least 1350 square kilometres), and increasing the risk of acid rock drainage which could have serious consequences for the downstream ecosystem (BHP, 1999).
  - *BHP Diamond Inc* In 2000, BHP was charged with eight violations of the Canadian Fisheries Act for disturbing fish habitat in the vicinity of its Ekati diamond mine in Canada's North West Territories.<sup>c</sup>
  - *ERA/North Limited (now owned by Rio Tinto)* Uranium mining in Kakadu against the wishes of the traditional landowners.<sup>d</sup>
  - *Rio Tinto* River and ocean dumping of tailings and human rights abuses at Freeport and Lihir (International Federation of Chemical, Energy, Mine and General Workers' Unions, ICEM, 1998: 27–8; Atkinson, 1998: 46–56; Abrash and Kennedy, 2001; Handelsman, 2001: 39–47).
  - *Ross Mining (now Delta Gold)* Ross Mining refused to publicly release its environmental impact assessment studies, despite concerns regarding contamination threats to rivers in the Solomon Islands (Burton, 2001c).
  - *RTZ-CRA (now Rio Tinto)* Environmental and social dislocation caused as a consequence of the operations of Bougainville Copper Ltd (Havini and John, 2001).
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*Notes:*

- a. It has been suggested that Aurora Gold urged the Indonesian government to remove illegal miners and opponents of the mine (Burton, 1999a; Oxfam Community Aid Abroad, 2001). Aurora Gold argued that the environmental impacts were worsened as a consequence of difficulties in accessing the site due to the occupation of the site by illegal mining (Aurora Gold, 2000: 7–18).

- b. This has probably been the most high-profile dispute involving an Australian mining company, in part because of the legal actions that have accompanied BHP's involvement with the mine. Litigation commenced in 1994 and was settled out of court in 1996 (Burton, 1999b; Evans, 1999a). In April 2001, further legal proceedings were initiated against BHP, alleging that BHP had not implemented all of the terms of the 1996 agreement. BHP withdrew from the mine in early 2002 and the mine is now controlled by a trust for the people of the area. BHP has written off its shareholding and has provided the new operating company with a US\$100 million interest-free loan.
- c. BHP pleaded not guilty to the charges (BHP, 2000: 19).
- d. The concerns have related to the present mining operations at Jabiru and proposed uranium mining at Jabiluka. The Jabiluka mine has been the subject of significant protest by the Aboriginal people, supported by national and international environmental and human rights NGOs (see, generally, Katona, 2001). Following its acquisition of ERA/North Ltd, Rio Tinto announced that it did not expect to open the Jabiluka mine, for financial, social and environmental reasons.

requests for assistance are being received by Oxfam Community Aid Abroad from mine-affected communities who feel that their grievances are not being properly dealt with by the Australian mining company concerned' (Oxfam Community Aid Abroad, 2001).

The examples presented in Table 7.4 also highlight the issue of free-riders for the Code. This was illustrated most starkly by the response of the Australian mining industry to the Esmeralda cyanide spill. In January 2000, a gold mine, which was half owned by the Perth-based company Esmeralda Exploration Ltd, spilt 100000 cubic metres of cyanide-polluted water into the Tisza river in Romania (Moran, 2001; Tayles, 2000). The spill poisoned the water supply of 2.5 million Hungarians and devastated the ecology of the local river system. The outcome was described by a Hungarian government official as the 'first environmental catastrophe of the 21st century' (as quoted in ACF, 2000). The industry was at pains to point out that Esmeralda was not a signatory to the Code, nor was Esmeralda a member of the MCA (Burton, 2000a; Wells, 2001). That is, the industry's primary response appeared to be aimed at protecting the reputation of the Code signatories rather than acting to

*Table 7.4 Examples of incidents and accidents involving non-signatories to the Code (1996–2002)*

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- *Dome Resources (now Durban Roodeport Deep)* Helicopter dropped one tonne of cyanide pellets into PNG forest (Divecha, 2000). Although much of the cyanide was recovered, the company admitted that up to 150kg had been dissolved by rain into the local river system.
  - *Esmeralda Exploration* Cyanide spill into rivers of Hungary, Romania and Serbia, killing one million kilogrammes of fish.
  - *Highlands Pacific* Plan to dump mine waste into the coral reef-rich Astrolabe Bay.
-

help remedy the damage caused (Sullivan and Frankental, 2002: 86; Oxfam Community Aid Abroad, 2003). Similar criticisms have been made about the industry's silence on other incidents involving Code signatories and non-signatories (Evans, 2000).<sup>8</sup> The industry's response reinforced NGO criticisms of the Code, which highlighted that (a) the Code did not ensure the performance of those companies that were not signatories (one form of free-riding), (b) the Code did not provide a means for the industry to respond to help remedy the damage caused, and (c) the fact that the mining industry had signed up to the Code did not seem to have resulted in a change of attitude towards the environment or a greater willingness to take responsibility for the industry's environmental impacts (Environmental Defender's Office, 2000; MPI, 2000; Evans, 2000; Oxfam Community Aid Abroad, 2003). This view was rejected by the industry, which has argued that no self-regulatory initiative can prevent accidents and that the NGO 'deliberately misconstrued' the Esmerelda incident to criticize the Code (see, for example, the views expressed by Wells, 2001).

### **Setting performance targets for the industry?**

The mining industry has been reluctant to define performance targets for itself. Australian NGOs have therefore defined what they see as appropriate key performance measures for the industry (see Table 7.5) as part of a set of broader requirements relating to issues such as negotiating with traditional landowners, resettlement and rehabilitation of communities, compensation of those who suffer loss as a consequence of mining, human rights, the provision of jobs and services, protecting the rights of women and minimizing social impacts.

Initially, these demands were rejected by the industry as unreasonable and inappropriate. There are, however, some signs that the industry is beginning to accept at least some of these conditions. For example, in 2000, BHP announced that it would no longer invest in new projects that involve the disposal of tailings into rivers and that it would consider dialogue on issues such as greenhouse gas emissions, deep-sea tailing placement and external verification of performance (BHP, 2000: 3). There is a growing industry consensus that riverine disposal of tailings is inappropriate although there is less consensus on other issues such as ocean disposal and mining in national parks and protected areas. Some of the other demands (for example, minimizing environmental impacts, monitoring environmental performance) are increasingly accepted as a standard part of mine planning and operations. A number of companies have reported that they have refrained from investments for reasons such as local, national or global community opposition, human rights issues, NGO/activist opposition and biodiversity (PriceWaterhouseCoopers, 2001: 19), although these decisions appear to be



*Table 7.5 NGO-defined environmental performance measures for the mining industry*

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The mining industry should:

- Cease riverine tailings disposal.<sup>a</sup>
  - Cease developing mines requiring the ocean disposal of wastes.
  - Cease mining and exploration in national parks and other protected areas.
  - Design mining projects to minimize their impact on the physical environment and to ensure that people who rely on that environment for their livelihood or well-being do not have that livelihood or well-being endangered.
  - Ensure that Australian companies operating overseas operate to at least the equivalent of Australian practices and standards of environmental management.
  - Only mine high sulphur ore bodies if adequate steps have been taken to prevent acid mine drainage.
  - Ensure that environmental monitoring systems are maintained around mine sites and have systems in place to ensure that corrective action is taken when the monitoring reveals a problem.
  - If rivers or streams used by communities downstream are inadvertently polluted by the company's operations, take responsibility for stopping the source of pollution as soon as possible, repairing any damage caused and providing compensation for those affected.
  - Ensure that decommissioned mines are left in a safe and stable condition and that landforms, flora and fauna are restored as near as possible to the pre-mine state.
  - Cease advocating the weakening of environmental regulations, labour rights and indigenous rights.
  - Commit to mineral use efficiency and resource conservation measures rather than promoting increased production and resource consumption.
- 

*Note:* a. Tailings are the coarse and finely-ground waste from the mined rock remaining after the target minerals have been removed from the ore. Tailings are potentially highly toxic and the leakage from tailings dams may lead to toxic chemicals and metals being transported to surface water bodies or to groundwater (MPC, 2001a).

*Sources:* MPI (1998: 13–14); Oxfam Community Aid Abroad (1999).

highly case- and project-specific. There is no systematic evidence that the industry is moving to a situation where environmental factors outweigh economic considerations. As noted by one mining industry representative interviewed for this research:

Some costs are an integral part of mine planning. They are those that are imposed on us by regulators and those that are required by communities. Beyond that,



environmental options are treated in a similar manner to other options – will they work, what are the costs and benefits, are these the best places to invest our time and effort?

As a final comment on Table 7.5, the majority of the performance measures relate almost exclusively to new developments. On existing projects, these conditions are unlikely to be accepted or seen as relevant. That is, while companies may adopt the principles for new operations, they are extremely unlikely to shut down or significantly alter existing mining operations simply to comply with these. Consequently, for the foreseeable future (which could be for the next 30–40 years, given the planned lifetimes for many mines) many mines will continue to fail to meet these conditions.

### **Sustainability**

Sustainable development presents a specific issue for the mining industry as, while the concept does not preclude the use of non-renewable resources to generate human well-being, it does suggest that their substitution by renewables is encouraged and that their environmental effects are fully accounted for (Pearce, 1993: 4). In its stronger conceptions, sustainable development could be interpreted as requiring that the industry reduces its rate of production and, rather than developing new mines and new prospects, focuses on consolidating existing developments and on the re-use, recovery and recycling of its products (Cain, 2000: 13; MMSD Australia, 2002: 29). Expressed another way, it has been argued that: ‘To date, too much of industry discussion and debate with regard to sustainability and responsible mining practices has focused in the technical issues of how to mine rather than the larger issue of whether, and where, to mine’ (D’Esposito, 2000: 1).

In a recent survey of 32 international mining and minerals companies, over 80 per cent said they had taken steps to embed the principles of sustainable development throughout their organization, mainly through considering these principles in their corporate strategies (PriceWaterhouseCoopers, 2001: 15–16). The international mining industry has argued that the pressures of sustainable development can primarily be defined as requiring the industry to significantly enhance its efficiency through improving eco-efficiency, increasing waste reduction and recycling rates, improving production processes, prolonging the life of metals and minerals, eliminating or recycling wastes, conserving energy, pursuing greater use of renewable resources and adopting life-cycle thinking (PriceWaterhouseCoopers, 2001: 35). This definition of sustainable development has been seen by many NGOs as a weak interpretation of sustainability, as the industry’s focus on efficiency is seen as obscuring broader questions around sustainability and the role of materials in society, and there is growing evidence that the environmental benefits associated with improved efficiency will be outweighed by increases in production.

The overall assessment of the industry's performance on sustainability is that while the industry appears to be improving its environmental performance (as measured by emissions and wastes) at the site level, there are no substantial signs of broader changes in environmental performance or in addressing issues such as the continuing growth in rates of production or on the adoption of complete life-cycle thinking into business decision-making processes. It was also recognized by MMSD that the Code is, at best, a limited instrument for sustainable development (MMSD Australia, 2002: 52).

### **Economic Efficiency**

To date, there has been no systematic evaluation of the costs and benefits associated with the development and implementation of the Code or of the decisions made as a consequence of its implementation. The data that are available from the industry on the costs of environmental management are limited, as the industry does not generally disaggregate environmental expenditures from other capital and operating expenditures. The common view in the industry is that environmental factors (frequently driven by licence or planning conditions) are an integral part of virtually all projects and that, from the industry's own costing perspectives, it makes limited sense to attempt to separate these costs out. For example, in its environmental report for 2000, Pasminco highlighted difficulties in reporting environmental expenditures in a meaningful way, noting that capital expenditures aimed at improving efficiency are not a purely environmental expenditure, and that while some expenditure may be 'environmental' in name, the alternative may be to shut the facility (Pasminco, 2000: 47). In a similar manner, BHP reported that it spent approximately A\$90 million in 1999/2000 on labour and consultants costs and environmental programmes and studies, but that these expenditures did not include environmental costs such as the treatment of emissions, discharges to water, waste management and clean-up costs, nor did they include the environmental component of capital projects (BHP, 2000: 47; similar comments were made by CRL, 2000: 24).

The interviews with industry representatives suggest that apart from requiring companies explicitly to consider environmental issues in their decision-making processes (which the majority appear to do anyway, given the importance of environmental factors in planning and approval processes and operating practices), the Code has not altered the manner in which decisions are made or the investment criteria that are applied to environmental expenditures. That is, the Code can be said to be economically efficient (in terms of private costs) in that it has not required the signatories to take any actions beyond those that can be clearly justified in economic terms or that would have been required anyway.

## **Transaction Costs**

There is limited information available on the costs of participation and compliance by participating firms or the MCA. From interviews with company environmental managers, the Code is seen as another task that they are required to complete. Apart from specific costs associated with participation (for example, if consultants are required to assist with specific tasks such as reporting), other activities have tended to be absorbed within existing workloads.

Many of the requirements of the Code reflect existing expectations (whether or not explicitly required by legislation) and current norms of good practice in the industry (for example, the principles of community consultation and the implementation of EMSs). Even public reporting, which is the primary 'deliverable' from the Code, could be seen as codifying the expectation that the industry will report on its environmental performance. The one difference relates to enforcement. The Code envisages that there is some enforcement (through the mechanisms of industry peer pressure and through the requirement to be a Code signatory in order to be a member of the MCA), although this is qualitatively different from the types of enforcement processes that could be envisaged (site inspections, prosecutions) in a regulatory programme.

The industry has identified a series of benefits that are accruing to the industry from the Code (for example, promoting the industry's environmental achievements, increasing public and regulatory body confidence in the industry and enabling the industry to demonstrate due diligence). While it is difficult to assign a financial value to these benefits, interviews with industry representatives indicate that these benefits are seen as significantly outweighing the costs of participation in the Code. That is, the transaction costs may actually be negative for the Code participants.

## **Competitiveness Implications**

It is difficult to tell whether or not membership of the Code has provided a competitive advantage for signatory companies. Most of the signatories highlight their membership of the Code in their environmental reports and other promotional materials. However, there is no systematic evidence to indicate that membership of the Code has been a deciding factor in the award of operating licences, either in Australia or overseas. From interviews with industry representatives (in particular environmental managers), there is a general recognition that environmental management is just one of the many factors that are considered in decision-making, although there is a perception that environmental performance is increasingly seen as an 'entry requirement'

for tendering for new concessions. As expressed by one environmental manager interviewed for this research:

A track record on environmental performance is an organisational prerequisite. We can't conclusively point to a situation where environmental issues were the deal-maker or deal-breaker. However, we never want to be in a situation where a lack of environmental performance or management systems – EMS, public reporting, etc. – leads to us being excluded from a tender. The Code is a tangible demonstration of our commitment to environmental management.

Despite the existence of the Code, the Australian mining industry (both signatory and non-signatory companies) and the international mining industry generally have continued to be criticized for their social and environmental performance. However, in an interview, one industry representative argued that:

Since the implementation of the Code, we haven't seen the same level of NGO activity as we saw in the mid 1990s. Companies are more prepared to engage with NGOs and look to find common solutions to problems.

## **Soft Effects**

The MCA has argued that the reporting of environmental performance has been a major driver for change within the mining industry, leading to increased use of tools such as EMSs and external auditing procedures (MCA, 1999a). The setting of targets has benefited companies through accelerating the development of data collection systems, increasing the understanding of technical data and allowing the development of new means of measuring performance (Ringwood, 1998: 317; MMSD Australia, 2002: 52). The publication of targets (in public environmental reports) has been seen as a means of stimulating change through greater openness and transparency (Ringwood, 1998: 314; MMSD Australia, 2002: 52). As noted by industry representatives interviewed for this research:

Without the Code, we would have nothing like the same number of companies reporting. The Code has accelerated the rate of reporting.

While there is a perception that the Code and reporting are not related, the reality is that the Code has driven public reporting across the industry.

The industry has reported a series of soft effects from the implementation of the Code, including fostering consultation in the industry, placing the environment explicitly on the corporate agenda, creating opportunities for institutional learning and information-sharing, and developing a culture of continuous improvement in the industry (MMSD Australia, 2002: 52). As

noted by one industry association representative interviewed for this research:

There is a growing awareness of senior management of the importance of the environment and of environmental issues to the mining industry. The Code is now an explicit agenda item at many of our meetings.

Despite the reported benefits, the Code appears to have had less influence on internal management and performance assessment processes than implied by the industry. Most mining companies have a range of rating and assessment processes that they use for assessing performance, and the specific requirements of the Code appear to be a minor influence on these internal processes. It is pertinent to note that the Code is explicitly intended to provide a framework rather than a detailed prescription for action and, therefore, it is not unexpected that other tools and processes are used to define or assess performance at the operational level. As noted by one industry representative interviewed for this research:

We report on our performance with the Code and with Code compliance. But the Code is not the driver for performance improvement within our company or within the industry as a whole.

## **Innovation**

The Australian mining industry argued that the diversity of the industry (from companies with multi-faceted operations spread over numerous sites through to small, single-site operators) and the range of activities covered by the Code (from exploration to decommissioning) meant that the Code needed to provide a generic set of principles that were flexible in their implementation (MCA, 1999b). The industry argued that this flexibility and focus on principles would encourage creativity amongst companies to develop solutions to complex problems. While the reported soft effects (for example, culture change) do provide a starting point for innovation, the evidence that is available is that the Code, as a consequence of the absence of specific targets, does not of itself provide a strong stimulus for change or innovation.

The industry has argued that the process of continual improvement and research into environmental performance will lead to it developing better products and processes and innovative technologies. To an extent, this is supported by the evidence of good environmental performance within the industry and the various technologies that have been developed by or on its behalf, although given the other pressures brought to bear (for example, community concerns, regulation, 'licence to operate') and the reality that most companies have some form of EMS in place, it appears unlikely that the Code

itself has significantly contributed to innovation. As noted by one NGO representative interviewed for this research:

The mining industry only does environmental research because it has to – as a government requirement or expectation – or because it is subsidised. If the industry was left to its own devices, most of the research currently being carried out would not be done.

### **Inclusiveness and Public Participation**

One of the key criticisms of the Code has been that the mining industry has no formal mechanism to receive complaints from individuals or communities affected by the activities of Australian mining companies. In February 2000, Oxfam Community Aid Abroad established a mining ombudsman, (a) to assist communities in developing countries whose human rights are being threatened by the activities of Australian-based mining companies to get a fair, negotiated resolution, (b) to assist communities that are, or might be, affected by a mining operation to understand their rights as established by international human rights instruments and industry best practice, (c) to help ensure that the Australian mining industry operates in such a way that the basic rights of landowners and affected communities are better protected, and (d) to encourage the Australian mining industry to establish an official complaints mechanism (Oxfam Community Aid Abroad, 2001). Since then some 15–20 cases have been investigated, although Oxfam Community Aid Abroad has noted that the number could have been higher. The cases investigated have included operations owned or operated by Australian mining companies in Indonesia, Papua New Guinea, Peru and West Papua (Oxfam Community Aid Abroad 2001, 2002, 2003). While each case has unique features, the grievances can be loosely grouped into four areas, namely loss of land, loss of individual and collective sustainable livelihoods, degradation of the environment and natural resources, and human rights abuses. Oxfam Community Aid Abroad has argued that the number of cases it has to deal with, and the consistent allegations of human rights violations and environmental degradation against Australian mining companies, are evidence of the inadequacy of the industry's efforts at self-regulation. Of the cases that have been investigated, approximately half have involved signatories to the Code. The mining industry has consistently rejected the Oxfam (and other NGOs') demand for the establishment of an independent complaints process or for enforcement processes beyond those presently provided by the Code.

The industry has made significant efforts to involve NGOs and other stakeholders in both of the Code revision processes, through writing to NGOs to request comment and inviting them to meet with the industry (see, for

example, Stutsel, 2003). However, the processes have been less than satisfactory from the perspective of the NGOs who have seen them simply as a means of legitimizing the Code rather than implying substantive engagement with NGO concerns. NGOs have argued that the refusal of the industry to establish an effective complaints process or to set specific performance requirements for Code signatories are indicative of the lack of inclusiveness of the Code process and to the superficiality of the public consultation process.

One of the key elements of the Code is community engagement and dialogue (MCA, 2000: 5). An increasing number of Australian mining companies have actively sought to engage NGOs and communities in monitoring the industry's environmental performance (Hancock and Roarty, 2002: 2). Views on the value of such consultation processes are divided among Australian NGOs. Some have argued that such consultation can help minimize adverse environmental impacts at mine sites, whereas others have argued that the overall effects include the rolling back of the state as a regulator and increasing the success of corporate campaigns against NGO critics (Cleary, 1999; see also the case studies presented in Evans et al., 2001). These consultation processes have also been criticized for being predicated on the assumption that mining will proceed (that is, the discussion is 'How should such mining be carried out?' rather than 'If such mining should be carried out'), and the potential to marginalize or co-opt NGOs or community groups, divide and conquer NGOs and compromise NGO campaigning activities (Burton, 1998). The industry has contested these criticisms, with industry representatives arguing:

The Code has contributed to a change in attitude towards stakeholder consultation and has helped spark a new way of doing business.

The purpose of stakeholder consultation is not to capture stakeholders but to provide information, help stakeholders to understand the industry's issues and, where appropriate, enable the industry to work with stakeholders.

## **Viability and Feasibility**

### **Industry perspectives**

The MCA strongly promoted the Code as the centrepiece of its activities on environmental management, arguing that there is considerable potential for voluntary industry initiatives such as the Code to enable the industry effectively to 'manage the threats and exploit the opportunities' presented by changes in domestic and international environmental legislation and policy. The MCA's view was supported by some of the industry representatives interviewed for this research:

We see that the Code has real value. Given that so many companies have signed on the Code, it signals a collective support for the Code and demonstrates the credibility of self-regulation.

The Code provides the industry with greater credibility with stakeholders and many of the signatories use the Code as part of their discussions with government.

The value of the Code to the Australian mining industry appears to have declined somewhat since 2001, reflecting the increased focus of the industry on international opportunities and the involvement of the Australian mining industry in the MMSD and follow-up processes. With the government's rejection of the Code of Conduct Bill in 2001 which proposed the extra-territorial regulation of Australian firms (see, further below), the industry's need for the Code appears to have declined.

### **Government perspectives**

The Commonwealth government and the state and territory governments have welcomed the Code. The importance of the mining industry to the Australian economy has meant that government (at the Commonwealth and at the state and territory levels) has been reluctant to act in a manner that could affect the viability of the industry. This is reflected in the National Strategy for Ecologically Sustainable Development which states as its aims for the mining industry the promotion of sound environmental practices throughout the mining industry, the provision of appropriate community returns from mineral resource development and the improvement of community consultation and development (Commonwealth of Australia, 1992a). Since the release of the strategy, the focus of government action has reflected this approach, with much of the government's efforts focused on promotional and educational processes. In this context, the Code fits with government preferences for non-regulatory approaches. However, the mining industry has been critical of government (at both the state and Commonwealth levels) attitudes to the Code, with one industry representative arguing:

Despite all its rhetoric of support, government does not appear to recognise where the Code fits into the overall regulatory process. We have tried to encourage government recognition for the Code, such as regulatory relief or formal benefits for the industry, and to allow signatories to benefit but progress on this has been disappointing.

### **NGO and civil society perspectives**

There is some divergence in NGO attitudes to the Code: WWF joined the External Environmental Advisory Group, whereas other NGOs have stayed outside the Code processes. However, WWF has tended to work much more closely with the mining industry than other Australian NGOs. For example, in



2000, WWF entered into a \$1.2m research and conservation partnership with Rio Tinto (Rio Tinto, 2000; Burton, 2000b).

NGOs have criticized the Code because of the absence of environmental performance standards and enforcement mechanisms for breaches, the inadequacy of monitoring and verification processes and the absence of means for ensuring the performance of non-signatories (ACF, 2000; Burton, 1999c; Evans, 1999b; Atkinson, 1999; WWF, 2000). The scope of both the original Code and the version issued in 2000 were also criticized for focusing on environmental issues alone, rather than encompassing some of the broader issues associated with the mining industry, such as the protection of human rights and protection of local economies (Burton, 1999c; Evans, 1999b; MPI, 2000; Oxfam Community Aid Abroad, 2001: 6). The mining industry consistently rejected these arguments, arguing that the inclusion of social issues would detract from the specific environmental purposes of the Code (MCA, 1999b). It is interesting to note that the proposed revised Code, discussed below, includes social issues, and, therefore represents a significant departure from the industry's previously stated views.

The differences in views between NGOs and the mining industry reflect the strong divergence of views on the industry. While the industry believes that the economic benefits from its activities are of national importance and can be gained while protecting environmental and other values (that is, that impacts can be technically managed), environmental groups argue that mining's impact on ecological integrity and biodiversity may often be adverse and irreversible. The NGO scepticism regarding the Code is, in many ways, a reflection of their broader concerns around the performance of the mining industry. It is clear that the industry is frustrated with the lack of recognition for its environmental management efforts, as illustrated by the comments of one mining industry association representative:

The issue of verification and the constant reference to verification by NGOs is frustrating, in light of the huge efforts made by the industry to report, to make information widely available, and to communicate with stakeholders. Some companies are now making data available in real time, while others are even providing money to communities to allow them to do their own monitoring. The industry is trying to ensure the quality of its reports through the use of credible consultants that are accredited to appropriate professional standards. It's hard to see what more can be done.

The divergent views on the industry also correspond to historical views on mining in Australia. While mining has generated significant economic wealth for Australia, the industry also has significant legacy issues such as abandoned mines and a record of high profile incidents involving Australian mining companies (Tables 7.3 and 7.4). While a generally negative perception of the

industry is still widely held, opinion surveys since the mid-1980s show community acceptance of the need for good economic performance and wealth creation as well as an increased awareness of the industry's improved environmental performance (Hancock and Roarty, 2002: 18–19).

In 2000, the Australian Democrats proposed a Corporate Code of Conduct Bill. The objective of the Bill was to require Australian companies operating overseas to take all reasonable measures to prevent material harm to the environment, to monitor performance and to promote health and safety, not to benefit from forced labour, to pay a living wage, not to dismiss workers for reasons of illness or accident, to allow collective bargaining, meet minimum labour standards and report on performance (Parliamentary Joint Statutory Committee on Corporations and Securities, 2001: 3–4). One of the primary motivations for introducing the Bill was the record of the Australian mining industry (in particular, the controversy surrounding BHP's Ok Tedi mine in Papua New Guinea). The Bill was strongly opposed by the mining industry but was, unsurprisingly, supported by NGOs. NGOs used the incidents involving Esmeralda Exploration and Dome Resources (see Tables 7.3 and 7.4) to argue in favour of the Bill and to highlight the failings of the industry's efforts at self-regulation (ACF, 2000; MPI, 2000; Environmental Defender's Office, 2000; Public Interest Advocacy Centre, 2000). While the inquiry into the Bill recommended that it should not be adopted, both of the major opposition parties in Australia tabled dissenting reports on the inquiry's conclusions.

## **Law and Public Policy Issues**

### **Policy lobbying**

Despite the environmental commitments stated in the Code, over the period 1996–2002 the mining industry strongly opposed regulatory efforts to introduce further environmental legislation. For example, in Australia alone, the industry opposed the Corporate Code of Conduct Bill (MCA, 2001c; Burton, 2001a), mandatory environmental reporting under the Corporations Act, various National Environmental Protection Measures (Gunningham and Sinclair, 2002: 144) and Australian government ratification of the Kyoto Protocol (MCA, 2001d; MCA, 2003: 15), as well as various state initiatives (for example, the New South Wales Load Based Licensing Scheme) (Sullivan and Frankental, 2002: 87). It has also been argued that the industry increasingly has a tendency routinely to defend and, if necessary, appeal all prosecutions, even those where it would, in the past, have pleaded guilty or accepted the initial judgment of the court (Gunningham and Sinclair, 2002: 144). Overseas, a similar picture emerges. For example, BHP and Rio Tinto were criticized for their role in assisting draft legislation in, respectively, Papua New Guinea (to prevent PNG plaintiffs from suing an Australian

company in an Australian court) and Indonesia (J. Gordon, 1997; Burton, 2000c). NGOs have argued that this lobbying runs counter to the principles (if not the letter) of the Code, and that the consequence is that public trust in the ability of the industry to regulate itself has been undermined (Evans, 1999a).

### **Consistency of performance: Australia and overseas**

The Code is intended to apply to all operations of signatory companies, irrespective of where the operations are located, although there appears to be a degree of inconsistency in the manner in which companies apply this requirement. Concern has been expressed that the signatories to the Code are not applying it to all of their activities, in particular when operating overseas (MMSD Australia, 2002: 53; Oxfam Community Aid Abroad, 2001). In practice, it appears that while the majority of companies apply some core elements of corporate standards across all operations and comply with national legislation, only a small minority apply the highest international standards irrespective of location. MMSD recommended that 'the veracity of the Code's claim to cover signatories' overseas operations needs to be tested, and should be reported unambiguously in reports on the Code's operation' (MMSD Australia, 2002: 53).

### **Multiplicity of initiatives**

The Australian minerals industry has developed a range of initiatives in response to the environmental pressures that it faces. Examples include the establishment of the Best Practice in Mining modules in conjunction with Environment Australia; the development of codes for reporting on the quality and quantity of ore resources and the valuation of these resources; annual awards by state governments and by industry to recognize environmental performance and innovation; the establishment of environmental management systems; affirmative action for the training of indigenous people and facilitating the establishment of indigenous business enterprises; the development of external certification systems for companies operating in Australia; the establishment of external advisory committees for mine operations and closures; biodiversity initiatives; mineral processing technology initiatives; and contributions to international initiatives such as MMSD (Hancock and Roarty, 2002: 48; Brerton, 2002). These initiatives complicate efforts to evaluate the effect of the Code on the mining industry. The Australian mining industry has been under significant pressure to demonstrate its environmental credentials and has implemented a range of initiatives designed to allow it to respond effectively. The Code is just one of these initiatives and, therefore, disaggregating the effects of the Code from the range of other pressures on and responses from the industry is very difficult. If the primary goal of the Code was seen as allowing the industry to avoid the threat of extraterritorial

regulation, it can be seen as effective, both in forestalling the threat in 1995 and in allowing the industry to respond in 2001 to the Code of Conduct Bill.

### **Code Update: 2002–Present**

In 2002, the MCA announced that it intended a substantial overhaul of the Code in order to provide an operational framework for sustainable development (that is, to move beyond the environmental focus of the Code) and a series of common performance assessment criteria against which signatory companies are expected to report (MCA, 2002). A consultation process (August 2004) is presently underway and a revised Code is expected to be published and open for signature at the time of writing (August 2004) (MCA, 2003: 11). The Code is expected to build on the ICMM Sustainable Development Framework presented in Table 7.1 above (see, also, MCA, 2004). It is expected that the revised Code will include an overarching statement of intent and values underpinned by a set of core principles drawn from the ICMM Framework, and a series of specific statements of intent focused on issues of particular concern to the industry (Stutsel, 2003). These will include statements relating to principles for environmental management (which will build on the existing Code), social principles, economic development and health and safety. Other elements of the revised Code will include a protocol to assess signatory compliance and both process and performance measures, as well as various guidance documents to assist companies in implementing the Code.

One of the consequences of this process has been that the industry appears to have paid less attention to the current Code. A Code progress report has not been published since 2001, although certain aspects of this were covered by the MCA's 2002 sustainable development report. Furthermore, the External Advisory Group was replaced by an External Sustainable Development Advisory Group (MCA, 2003: 31). In 2003, the group focused on issues such as the industry's social licence to operate, environmental performance, the potential for partnerships and engagement to enhance the industry's role in sustainable development, corporate governance and foreign ownership and industry consolidation (MCA, 2003: 31).

### **Conclusions**

The major contribution of the Code has been to formalize the requirement for the industry to report publicly on its environmental performance. However, the absence of agreed industry-wide performance measures has meant that it is difficult to draw firm conclusions on the overall environmental performance of the industry or on the specific contribution of the Code to it. While there is

evidence that the industry's environmental performance has improved, these changes appear to reflect the broader regulatory and societal pressures on the industry to maintain its 'licence to operate', rather than the direct influence of the Code.

The long-term nature of mining operations creates specific problems. Many of the concerns regarding the industry's performance reflect historic decisions and the reality that the expectations of the industry have changed. This history has created difficulties for the Code, with the industry's achievements and initiatives being subject to critical scrutiny. This lack of trust has been exacerbated by specific incidents and accidents since the Code was established, by strong industry opposition to many regulatory policy initiatives, and the absence of effective processes for ensuring the performance of Australian mining companies, in particular when operating overseas. These failings have led to the Code being criticized for its inability to ensure performance and for not changing the manner in which the industry behaves, leading to ongoing pressure for regulation to ensure the industry's environmental performance.

In its report, MMSD noted that if voluntary codes are to reduce the pressure for regulation, such codes must be responsive to changing conditions and to stakeholder expectations. Specifically, MMSD noted that such codes should demonstrate that they address real problems, that compliance levels should be appropriate and properly enforced, that the codes should contribute to significantly improved performance, that they recognize the rights of communities and other stakeholders, and that they include opportunities for independent review and verification (MMSD Australia, 2002: 7, 32). The proposed revisions to the Code should address at least some of these requirements but it is clear that some fundamental challenges, in particular in relation to environmental performance and public participation, are likely to remain.

## NOTES

1. For a general overview of the size and scale of the mining industry, see Mining Minerals and Sustainable Development (2002: 34–56).
2. Surface mining tends to have greater impacts on ecosystems and soil erosion than underground mining because of the extensive surface clearing and disturbance involved. Underground mining is more frequently associated with adverse impacts on groundwater, increased risks of subsidence and increased risks to workers.
3. For example, mines in tropical areas face problems due to high rainfall and the potential run off of hazardous materials. In contrast, in areas with limited rainfall, the consumption of water may lead to the depletion of surface or groundwater bodies.
4. The sponsors of MMSD included most of the world's major mining companies, many of whom (for example, Alcoa, BHP-Billiton, MIM, Normandy, Pasminco, Placer Dome, Rio Tinto, Western Mining Corporation) are also signatories to the Australian Minerals Industry Code for Environmental Management. The other sponsors of MMSD included the United Nations Environment Programme (UNEP), the World Bank and the Australian government.

5. The register of signatory companies can be found at the MCA's website, <http://www.minerals.org.au> (last visited 15 August 2004).
6. See, further, the website of the Department of Environment and Heritage, [www.deh.gov.au/industry-performance/minerals/booklets](http://www.deh.gov.au/industry-performance/minerals/booklets) (last visited 1 December 2004).
7. The information in Tables 7.3 and 7.4 is based on ACF (2000); Mineral Policy Institute, MPI (2000); Evans et al. (2001); Atkinson (1998); various issues of *Mining Monitor* (1998–2001); reports in *The Australian* and *The Sydney Morning Herald* newspapers.
8. Similar comments were made by Bomsel et al. regarding the Omai mine spill suffered by Golden Star Resources Ltd in Guyana in 1995, where the press reported on the disaster in some detail but neither the larger mining companies nor national or international confederations publicly commented on the event (Bomsel et al., 1996).



## PART IV

### Synthesis and analysis





## 8. Discussion

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### LESSONS FROM THE CASE STUDIES

#### **Environmental Effectiveness**

One of the most striking features of the three voluntary approaches considered in Chapters 5, 6 and 7 is that there are such limited data to enable environmental effectiveness to be assessed. While there are some moves towards more standardized approaches to reporting, it has taken around seven or eight years for these concerns about data availability to be acted on. The delays in responding can, not unreasonably, be seen both as an indictment of the willingness of the participating organizations to be properly transparent and as a lack of engagement with, and responsiveness to, legitimate stakeholder concerns. A related issue has been that the performance measures or targets that have been set do not enable performance to be adequately assessed by outside parties. A good example is the Greenhouse Challenge with its focus on emissions abatement. While emissions abatement is an important measure of the effectiveness of greenhouse policies, a focus on emissions abatement means that the real measure of policy performance (that is, total greenhouse gas emissions) has been obscured. There are signs that this is changing, with participating organizations now required to report on total emissions as well as emissions abatement. However, the Australian Greenhouse Office retains its focus on emissions abatement as the primary measure of its policy initiatives in this area.

The three case studies appear to confirm the general concern that the targets specified in voluntary approaches are less stringent than the targets that would have been established in command and control regimes. While all three of the voluntary approaches have met most or all of their own performance targets, they have been criticized because of the freedom given to industry to set its own targets. The general absence of performance requirements has meant that the performance of participating organizations does not appear to have differed significantly from business as usual. Some important environmental benefits have been reported, in particular improved rates of regulatory compliance and the identification and implementation of cost-effective (or 'no regrets') environmental improvement measures. However, these outcomes appear to be primarily attributable to external pressures, in particular

regulation or the threat of regulation, rather than to the various voluntary approaches.

Free-riders have been a particular issue for all three voluntary approaches. Three different forms of free-riding have been identified, namely ensuring the performance of non-signatories, partial compliance and confining benefits to the participants. In relation to the first, ensuring the performance of non-signatories to the mining industry's Code has been a particular issue, given that there is no means for the industry as a whole to ensure the performance of these organizations. For the other two voluntary approaches, ensuring the performance of non-participants appears to have been less of a concern given that EMSs are primarily used to enable organizations to achieve regulatory compliance or other goals (that is, there is an underpinning of regulation to ensure performance) and given the broad application of the Greenhouse Challenge (that is, the Challenge has achieved a high coverage of the major industrial sources of greenhouse gas emissions). The second form of free-riding that can be seen is partial compliance, where organizations have joined the voluntary approach but have only had part of their operations covered by it. This has been seen in the cases of both EMSs (where some organizations have only had some parts of their operations certified but then used the logo in their advertising) and in mining (where there are questions regarding the extent to which companies apply the Code requirements to all of their operations, in particular overseas operations and joint ventures). The third form of free-riding, observed in all three voluntary approaches, is that many of the benefits of the voluntary approach also accrue to non-participants. Perhaps the most important benefit is that the existence of the voluntary approaches has been successfully used to argue against the imposition of regulation. The beneficiaries include both participants and non-participants. In some ways, this is the most critical of the forms of free-riding as it could be argued that those participating in the voluntary approach are the most environmentally aware and, therefore, in less need of the external driver provided by regulation. This argument needs to be treated with some caution as there is some evidence that it is actually weaker performers that participate in voluntary approaches as it is these organizations that have the most to gain from the avoidance of regulation.

### **Economic Efficiency**

None of the case studies provides compelling evidence for the efficiency benefits of voluntary approaches. Apart from regulatory compliance (which is seen as a 'cost of doing business'), participating firms have only adopted those measures that can be considered 'no regrets' (that is, where the decision makes economic sense, irrespective of the specific environmental issues involved).

The major efficiency benefit of the three voluntary approaches is that they do require firms to identify and assess opportunities for cost-effective environmental improvements. It could be argued that many of these cost-effective improvements are really 'low hanging fruit', where the only reason that they had not been addressed before was because they had not previously been identified. None of the voluntary approaches has altered the investment tests that need to be met for environmental projects to be approved. As discussed in the specific context of energy and greenhouse policies, the problem is not that there are no economically viable projects. If anything, the opposite appears to be true. There are many economically attractive environmental projects that are not being implemented. However, the voluntary approaches do not provide the necessary incentives for these opportunities to be taken.

Finally, it is relevant to note that, in all three of the voluntary approaches, the primary focus has been on optimizing private costs (that is, the costs to the participating companies) through the assessment of the direct costs and benefits to the individual organization, rather than on optimizing societal costs. The consequence is that the environment is effectively excluded as a factor in decision-making, except in situations where certain standards of environmental performance are mandated by regulation or where there are costs (for example, taxes) associated with pollutant releases.

### **Transaction Costs**

All three voluntary approaches have similar administrative and compliance requirements, with the obvious exception of enforcement processes, to those that would be expected in command and control regimes targeted at the same issue. That is, the transaction costs would be expected to be the same unless it could be shown that private actors can implement such regimes more efficiently than government agencies. It is not possible to draw firm conclusions on this issue as, in practice, voluntary approaches tend to rely heavily on elements of the regulatory apparatus (for example, standardized monitoring and quality assurance processes) and it is generally the case that it is the same organizations that carry out activities such as monitoring, irrespective of whether it is government or the private sector that is the client. Furthermore, in most cases, it is likely that many of the administrative and compliance costs would be incurred anyway, either as part of existing regulatory requirements or in response to pressures such as the threat of regulation. The consequence is that, in many cases, there is limited potential for significant savings on transaction costs.

It could be argued that it is not appropriate to compare the transaction costs of voluntary approaches with those of command and control regulations. In government programmes, the aims are to minimize the total transaction costs

(to government and industry) and to simplify the task of government (for example, to ensure that data are reported in a standard manner across a range of industry sectors). In contrast, in voluntary approaches, the objective is, often, to minimize the transaction costs to the participants. Because voluntary approaches tend to have a limited number of participants and/or involve a specific industry sector, it may be the case that it is easier to optimize the transaction costs.

### **Competitiveness Effects**

The impacts of the three voluntary approaches on competitiveness appear minor. While there are benefits for participating firms (for example, through enabling organizations to make better decisions on environmental expenditures), the freedom for organizations to join or withdraw from each of the programmes and the wide availability of information on each of the programmes means that the benefits of the voluntary approaches are available to all organizations. There was no evidence of collusion or cartels in the three case studies, but this does not enable a more general conclusion on this issue to be drawn.

### **Soft Effects**

All three of the case studies confirm the importance of soft effects as an outcome from voluntary approaches. The soft effects that have been reported have included the adoption of formal methods for considering environmental issues in decision-making processes, education and capacity building. It is probably an overstatement to attribute these outcomes exclusively to the voluntary approaches as at least some of the effects would have been seen anyway. For example, climate change is such an important environmental issue that it would probably be a high priority for energy intensive industries anyway, and the changes in the regulatory framework in Australia would probably have resulted in many organizations taking a more structured approach to regulatory compliance, irrespective of whether or not ISO14001 had been released.

In Chapter 2, in the discussion around the reasons why firms are not fully optimized, two specific barriers to optimal decision-making were identified, namely a focus on short-term returns over longer-term business sustainability, and the lack of awareness of the benefits of environmental initiatives. The case studies demonstrate the potential for voluntary approaches to overcome, or help overcome, these barriers. First of all, voluntary approaches can, when there is appropriate political and regulatory support, provide longer-term policy certainty. For example, all three of the voluntary approaches assessed

have been in place since 1995 or 1996 and have remained relatively unchanged over this period of time (that is, in the eight years to 2004). This policy certainty has helped organizations to plan their environmental investments in a more strategic manner and to consider longer-term benefits as well as short-term costs. Second, voluntary approaches may increase senior management commitment to environmental protection through providing better information on the benefits of environmental initiatives, creating a framework for accountability (for example, through reporting, industry peer pressure), and helping develop skills and capacity (for example, through education, training and support for participating organizations).

There is also the somewhat paradoxical (from an environmental perspective) argument that the effect of voluntary approaches is to encourage organizations to make ‘better decisions’ that are actually worse for the environment. For example, the effect of encouraging firms to make more rational decisions on the costs and benefits of environmental expenditures may be to discourage them from complying with legislation if the firm’s analysis determines that the benefits of non-compliance outweigh any costs that may be incurred. There is no evidence that this has occurred in Australian firms but the strong lobbying positions that have been adopted against regulation or specific economic instruments (for example, on greenhouse gas emissions) perhaps indicate that the ‘enlightened self-interest’ of industry is based on a rational calculation of the costs and benefits accrued through the voluntary approach compared to other policy approaches.

## **Innovation**

While each of the voluntary approaches resulted in environmental issues being placed on the corporate agenda and in enhanced learning (both of which are recognized as necessary precursors to innovation), there is limited evidence to suggest that this has led to innovative approaches to environmental management. In all three case studies, the absence of specific targets has provided limited incentive for firms to innovate. While it may be the case that the continual improvement and target-setting philosophies that underpin many voluntary approaches enable organizations to adopt innovative approaches to environmental issues, this cannot be stated conclusively for any of the voluntary approaches considered.

## **Inclusiveness and Public Participation**

Five specific processes were identified in Chapter 2 as being of particular importance in ensuring proper public and stakeholder participation in voluntary approaches. These were the processes that ensure that all interests

are represented, control the discretionary power of the regulatory agency, require the abatement objectives and the schedule for their achievement to be made explicit, mandate ex post public policy evaluation and ensure credible systems of sanctions. All three voluntary approaches fail most or all of these tests. While there are oversight processes for the EMS certification process (as the certifying organizations are de facto the regulator) and there is the sanction of the withdrawal of ISO14001 certification for non-conformance, there are no obligations on certified companies to engage with stakeholders, publicly disclose objectives and targets or to conduct ex post evaluations. Interestingly, while NGOs have been somewhat dismissive of the sanctions (that is, withdrawal of certification), it was clear from the interviews conducted for this research with environmental and other managers that maintenance of certification was often seen as an organizational and individual priority.

The Greenhouse Challenge has a similarly dismal performance, with no structured opportunity for NGOs or stakeholders other than companies to be involved, no controls on the discretion of the AGO and no sanctions in the event of non-performance. Given that the Greenhouse Challenge is a public voluntary programme, there is the potential for greater oversight and accountability by parliament and there have been two substantial reviews of the programme, one in 1999 and one in 2000 as part of a wider review of the Australian government's greenhouse policies. However, it is not clear that either of these reviews has substantially altered the manner in which the Greenhouse Challenge functions.

Finally, the mining industry Code is the only one of the three voluntary approaches that explicitly mentions issues such as community engagement and dialogue, and an increasing number of Australian mining companies have actively sought to engage with NGOs and communities in monitoring the industry's environmental performance. Views on the value of such consultation processes are divided among Australian NGOs. Some have argued that such consultation can help minimize adverse environmental impacts at mine sites, whereas others have argued that the overall effects include the rolling back of the state as a regulator and increasing the success of corporate campaigns against NGO critics. These consultation processes have also been criticized for being predicated on the assumption that mining will proceed ('How should such mining be carried out?') rather than 'If such mining should be carried out') and because of their potential to marginalize certain NGOs or to compromise NGO campaigning activities. There have been some reviews of the mining Code (for example, the 2001 report of the External Advisory Group, the Mineral Council of Australia's 2002 Sustainable Development report), but these have focused primarily on process issues rather than on the environmental outcomes that have been achieved from the Code.

## Acceptability

The case studies demonstrate the practical difficulties in ensuring the viability of voluntary approaches. While Australian industry has strongly supported each of the voluntary approaches, the relatively low number of Australian firms that have been certified to ISO14001 and the relatively low participation rates in the Greenhouse Challenge and the mining Code indicate that this support is not unambiguous. There appear to be a number of reasons for this. The first is that the direct economic incentives for participation are limited – EMS certification is not a requirement for winning government contracts, nor is Greenhouse Challenge participation a prerequisite for accessing specific programmes (for example, an emissions trading scheme). The second reason is that industry sees that there is a general lack of public recognition for the efforts of firms that participate in voluntary approaches. In fact, the situation appears to be worse than simply a lack of recognition, with many NGOs seeing voluntary approaches as cynical ploys to avoid regulation and, so, using the inadequacies of voluntary approaches to make more general criticisms of the environmental performance of participating and non-participating firms. The third is the argument that voluntary approaches may be precursors of regulation or may ratchet up the performance expectations of companies and industry. Given that voluntary approaches are frequently intended to forestall regulation, this seems like a disingenuous argument. The expectations of companies have evolved and generally increased over time and this trend is likely to continue. It appears somewhat misleading, and certainly inconsistent with the low standards set in the majority of voluntary approaches, to argue that voluntary approaches increase the environmental demands on companies.

As discussed in Chapter 4, policy-makers and regulators appear to be increasingly interested in the potential for new environmental policy instruments such as voluntary approaches, and many of the political and institutional barriers to such instruments have been removed. Government agencies have played important roles in both the ISO14001 certification process and in the Greenhouse Challenge, and have actively supported the minerals industry's Code. This reflects more general trends in Australia towards reducing the regulatory burden on firms, as well as strong government support for trade liberalization and the removal of trade barriers. Despite this, there is still a continuing reliance on and even strengthening of the regulatory framework. That is, while there is increased willingness to provide flexibility to firms, there is limited evidence that this actually signals the weakening of the regulatory framework.

All three voluntary approaches have been criticized by NGOs who see them as containing weak, if any, targets, lacking credibility and transparency, providing limited environmental performance improvements, and having the



potential to weaken or undermine the regulatory framework. These criticisms reflect the weaknesses of the voluntary approaches, in particular in relation to environmental performance, inclusiveness and public participation.

### **Law and Public Policy Issues**

Voluntary approaches are a reasonably well established part of the Australian regulatory framework. All three of the voluntary approaches discussed here have effectively occupied part of the regulatory space, indicating that many of the potential political and institutional barriers have been overcome. That is not to say that voluntary approaches are the preferred approach to all environmental problems or that there are not political or institutional barriers that may limit their application in certain situations, but rather that voluntary approaches are seen as a viable alternative to other approaches to regulation.

A particularly interesting feature of the Australian experience with voluntary approaches has been the lobbying positions adopted by industry. Despite the environmental commitment implied by the various voluntary approaches, Australian industry, in particular in the mining and energy sectors, has strongly opposed efforts to include environmental targets in legislation. The inconsistency between stated commitments and lobbying positions has undermined trust in the ability of industry to regulate itself. These inconsistencies have been used by NGOs to support their arguments for stronger regulation of industry (see, in particular, the analysis of the mining industry in Chapter 7).

One of the unspoken objectives of the three voluntary approaches has been to change the terms of the debate around the environmental performance of industry. The three voluntary approaches considered in this book focus on pollution control and emissions reduction. This position is based on the argument that the limits to growth are not those imposed by resource constraints but by the limits of sinks or systems that can safely absorb wastes. While waste and pollution issues are critical dimensions of the environmental debate, an exclusive focus on these issues also means that the broader debates around sustainability can be lost or obscured in the debate around efficiency and performance. That is, the fact that a product was produced efficiently says nothing about whether or not it should be produced in the first place or about its overall environmental impacts. In the three voluntary approaches considered here, industry has used the minimization of emissions per unit of production or consumption as the primary measure of success rather than absolute levels of emissions. A potential consequence of a public policy focus on emissions is that it may divert attention from broader issues such as whether or not specific products should be produced or the manner in which resources are consumed. Despite these criticisms, it is also necessary to

recognize that if a product is to be produced or a specific process or activity is to be carried out, it is clearly in the interests of both business and the environment that resource consumption and pollution be minimized.

## IMPLICATIONS FOR VOLUNTARY APPROACHES

The use of three Australian case studies has allowed variables such as political and administrative structures and broader policy contexts to be ‘held constant’. The manner in which the voluntary approaches have functioned reflects issues such as Australia’s geography, demographic trends, resource base, political and institutional structure, economic composition, trading relationships, energy production and consumption profile. The most important features that need to be highlighted are that (a) Australia is a resource and energy dependent economy, (b) there is political consensus that Australian industry should not be disadvantaged by environmental regulations, (c) Australia is a federation of states, where regulatory and environmental policy functions are divided between the Commonwealth and the states and territories, and (d) there are strong industry associations which often act as a brake on changes in regulation or environmental policy generally. While these features, in some ways, make the Australian situation unique, the evidence from the case studies does allow some broader conclusions to be drawn about the design of voluntary approaches and the introduction of voluntary approaches into the regulatory space.

### **Design of Voluntary Approaches**

Many of the criticisms of voluntary approaches (both the three reviewed here and in the literature more generally) relate to the limitations in the goals that have been defined. All three of the voluntary approaches are characterized by vague wording (for example, the term ‘continual improvement’ is not defined), poorly defined or no performance criteria and double-counting (see, for example, the discussion in Chapter 7 regarding the difficulties in defining a suitable baseline for greenhouse policy measures). These limitations have been recognized, with both the Greenhouse Challenge and the mining Code moving, albeit some eight or nine years after their introduction, towards at least defining some standardized performance indicators. These limitations in the goal-setting process have meant that all three of the voluntary approaches have been heavily criticized for not providing a suitable framework to enable external stakeholders to evaluate and verify the environmental outcomes achieved. From the literature on voluntary approaches and the lessons from the case studies, it can be argued that the core elements for any voluntary

approach should include quantified targets that are ambitious yet achievable; interim milestones and deadline dates; clearly expressed commitments at the level of the firm; specific requirements for the monitoring, reporting and verification of results; externally reviewed audits, formal interaction and benchmarking with peers.

Credible and reliable monitoring is an integral part of ensuring the performance of voluntary approaches as it is monitoring that should enable performance to be tracked over time. That is, apart from the need for clearly defined objectives and targets, there is also a need for monitoring, reporting and verification to enable performance to be assured. Because of the distrust of voluntary approaches among environmental groups, the legitimacy and credibility of such schemes are critically dependent on the provision of independent performance information. The Australian experience with public environmental reporting is less than encouraging in this regard, with a relatively small number of companies actually reporting and ongoing concerns remaining regarding the quality of the data reported. A number of changes to ensure the quality of these reports have been proposed including the greater involvement of third parties, independent auditing of performance, auditor certification, formal verification processes and procedures that define the actions to be taken in the event of violations. It is interesting that these elements are all starting to be adopted (although not necessarily consistently or completely) in the three voluntary approaches considered in this book. Industry groups, in particular, have emphasized the importance of credible data to ensuring the viability of voluntary approaches, and much of the recent work on the mining Code and the Greenhouse Challenge has focused on these specific issues. Despite these stated commitments to credible data, there has been very slow progress in actually giving effect to these commitments.

As discussed in the three case studies, the definition of the business as usual scenario is a particularly contentious issue for all voluntary approaches. It is likely to be futile to try to resolve the debate around whether business as usual should be defined in terms of static efficiency or dynamic efficiency. However, stepping back from this debate, some minimum data requirements can be identified. These are (a) the baseline (or starting point) and endpoint and the basis on which these have been calculated, and (b) the alternative methods that can be used (for example, static efficiency, dynamic efficiency, changes in business activities) to assess the performance of the voluntary approach. While the provision of these additional data will involve some additional work as part of the ex ante assessment of the voluntary approach, the benefit should be that the monitoring and evaluation of the voluntary approach is more robust. This, in turn, should allow for a more substantive discussion around the actual performance outcomes that are achieved.

The credibility of all three voluntary approaches has been weakened by the

absence of mechanisms for ensuring performance. There are no substantive sanctions for failing to meet the requirements of any of these voluntary approaches, other than withdrawal of a logo or certification. Even in the mining industry, there is no real evidence that membership of the Minerals Council of Australia provides any incentive for organizations to sign up to or remain in compliance with the Code. There is also limited evidence that any of the voluntary approaches has stimulated significant changes in the environmental performance of participating organizations. It appears that the primary drivers both for improved performance and for participation in the voluntary approaches have come from regulation or the threat of regulation. If regulatory requirements had not tightened significantly over the past decade, it is unlikely that EMSs would have been as widely adopted, while the primary reason for the introduction of the Greenhouse Challenge was the threat of a carbon tax.

Third-party participation in the process of negotiating the voluntary approach, setting objectives, implementation and monitoring performance is regarded as an essential part of ensuring the credibility of voluntary approaches. This demand for participation, which has been made in relation to both the mining Code and the Greenhouse Challenge, reflects the NGO distrust of voluntary approaches. NGOs have emphasized that, in order to ensure that this participation is effective, there should be reasonable notice that the voluntary approach is being developed, stakeholders should be able to contribute at all stages in the process, there should be requirements for minority views to be considered, rights of appeal and publicly available records of deliberation, decision and performance, and institutional structures should be established with external stakeholders for the ongoing monitoring and reporting of the implementation of the agreement.

### **Voluntary Approaches in the Regulatory Space**

The three voluntary approaches studied can be seen in a number of different ways. If they are considered purely in terms of their ability to achieve high standards of performance (that is, significantly beyond the standards specified in legislation), then it is clear that none has enabled this goal to be achieved. However, if voluntary approaches are seen as facilitating or initiating change then the terms of the debate change. The case studies indicate two separate functions for voluntary approaches in the policy mix. The first is as providing a transitional function, for example where legislation is planned or being contemplated and where it is in industry's interest to take early action or to prepare for the introduction of legislation. As an example, the Greenhouse Challenge can be seen as enabling industry to establish the systems, processes and capacity necessary to respond to current and future requirements on greenhouse gas emissions, and the greenhouse inventory, action planning,

reporting and verification processes could all be readily adapted to a stronger regulatory regime or to an emissions trading scheme. The second way of looking at voluntary approaches is as an implementation mechanism or tool. This appears to have been the case with both EMSs and the mining Code, where both programmes have emphasized regulatory compliance. In the case of EMSs, this is through explicit requirements to identify and address legislative requirements and, in the case of the Code, it is through requiring organizations to commit to regulatory compliance and to report on regulatory compliance.

It is interesting that the three voluntary approaches have all been applied to new problems (or to issues that were not being directly regulated). That is, the ability to introduce the voluntary approaches not only relied on the potential environmental or other advantages to be gained but also needed the existence of a gap in the regulatory space. Given that the Australian regulatory space (as in many developed countries) is crowded and that it is unlikely that the public would countenance any significant weakening of the regulatory framework, the further use of voluntary approaches appears most likely in areas where there is no regulation, rather than as an alternative to existing regulatory frameworks.

One of the interesting features of the experience with voluntary approaches in Australia has been that, in parallel with industry interest in voluntary approaches, there have been ongoing complaints regarding regulatory overload. It has been argued that regulatory overload has made the addition of further complex legislation to the regulatory space difficult. In this context, industry interest in voluntary approaches could be seen as somewhat contradictory. However, there may be some explanations. The first is that the complexity of environmental issues and the growing knowledge regarding environmental issues has meant that the scope of public policy will need to broaden. That is, the debate reflects the reality that some action will be required on a range of issues and therefore the debate is less 'if (there will be regulation)' and more 'what (regulatory approach will be adopted)'. The second explanation is that voluntary approaches can simplify the task of managing environmental issues. This is particularly the case for EMSs and, to a lesser extent, the mining Code and the Greenhouse Challenge, where the effect is to provide a systematic approach to managing environmental issues and enabling structured decision-making processes to be adopted for environmental issues. The third is that the aim could be to crowd the regulatory space, or even consume the available capacity within firms, thereby forestalling efforts by government to introduce further regulation. Such arguments are, necessarily, speculative but they do signal that the problems of regulatory capture may be exacerbated as a consequence of companies participating in voluntary approaches.

## Revisiting Regulatory Pyramids

If the multiple regulatory pyramids model (discussed in Chapter 3) is revisited, it can be seen that voluntary approaches may also have the effect of deepening the regulatory space. Each of the three voluntary approaches has added to the levels of enforcement that are available. For example, in the case of EMSs, the need to comply with relevant legislation, or to have taken suitable actions to comply with legislation, in order to obtain certification provides an additional incentive to compliance within organizations. In this regard, EMS certification can be seen as adding new pyramids to the regulatory space, where the pressures are demands for certification (for example, as a condition of market access) and where the tiers are certification (that is, a reward), dialogue on the actions required to achieve certification and, ultimately, the withdrawal of certification. Furthermore, the auditing and management processes that are an integral part of EMSs add internal pressure to ensure compliance and create a system of accountability for ensuring performance. In the Greenhouse Challenge, the situation is slightly different as greenhouse gas emissions are not presently regulated, although they provoke significant concern. The Greenhouse Challenge adds to the regulatory space through introducing new regulators (that is, the Australian Greenhouse Office as well as internal stakeholders), through requiring CEOs to sign Greenhouse Challenge Cooperative Agreements, introducing new incentives (that is, the Greenhouse Challenge logo and the other benefits that accrue to members of the Greenhouse Challenge) and empowering parties such as NGOs through providing them with information on organizations' performance. The mining Code introduces industry peer pressure to ensure conformance with the Code as well as providing information to enable other stakeholders to assess the industry's performance. A further important feature of the mining industry Code is that it is intended to apply to all of a signatory company's operations, both in Australia and overseas. However, to date, there is limited evidence that this has occurred, although it has been recognized by the industry as a necessary step in developing the Code's credibility.

While there are weaknesses and limitations in each of the voluntary approaches considered, they have all had the effect of broadening the regulatory space through introducing new issues that are the subject of regulation, through introducing new regulators and empowering existing stakeholders. That is, the three voluntary approaches considered have added new regulatory pyramids to the regulatory space, added to the tiers in existing regulatory pyramids and potentially increased the pressures that can be brought to bear on organizations. This is of particular importance given that the manner in which firms respond to pressures such as legislation, financial pressures and shareholder, investor, customer and consumer expectations is

not predictable. For each firm, one or more of these pressures will be the primary driver (or drivers) of response. However, in the case of individual firms, it is not possible to predict the specific responses that will be adopted or the key pressures that need to be applied to motivate the appropriate response. Some organizations will be extremely proactive and responsive whereas others will not. The reasons for the responses will vary, reflecting not only the specific issue in question but also broader issues such as the firm's attitude to the environment and organizational barriers. In this context, voluntary approaches can be seen as providing new sources of pressure to ensure performance and as targeting organizational motivations (for example, industry peer recognition) that are not targeted by legislation, thereby potentially enhancing the performance of firms. However, two qualifications need to be made about this potential enhancing of the regulatory space. The first is that, in the majority of voluntary approaches, the pressures that can be brought to bear are, almost inevitably, weak. The second is that the voluntary approach may weaken some of the more important pressures. For example, if the existence of a voluntary approach reduces the likelihood of regulation being implemented, the net effect could be to reduce the pressures on firms to address specific environmental issues.

## VOLUNTARY APPROACHES IN COMBINATION

Some of the companies that are signatories to the mining Code have also developed and implemented management systems that meet the requirements of (or are aligned with) ISO14001 and have signed up to the Greenhouse Challenge. However, the rate at which the Code signatories are formally joining the Greenhouse Challenge or achieving certification is mixed. A number of companies (for example, BHP, MIM, Rio Tinto, Bendigo, Normandy Mining, Placer Dome, WMC) joined the Greenhouse Challenge as individual members, whereas others joined as members of their industry association (for example, the Australian Aluminium Council covers Alcoa and Nabalco). Many of the signatories have aligned their EMSs with the requirements of ISO14001. Some have had their EMSs certified (for example, Thiess, Illawarra Coal, Alcoa) while others have identified certification as one of their environmental objectives (for example, Nabalco). This phenomenon of companies signing up to multiple voluntary approaches is increasingly common and hence is considered further below. The analysis is divided into two parts. The first is a conceptual analysis based on the content of the three voluntary approaches considered here. The second is an empirical assessment, based on experience with the three voluntary approaches in the specific context of the Australian mining industry.



## Content Analysis

Table 8.1 illustrates the areas of alignment and potential differences between the three voluntary approaches. At the broad level of policy, the primary purpose of the mining Code is to define a broad direction for the industry to address environmental management issues, through the specification of principles that should guide companies' environmental management activities. In contrast, ISO14001 can be seen as a policy implementation tool to allow companies to meet the specific targets set for themselves (which, in the case of the mining industry, includes any obligations imposed as a consequence of being a Code signatory). ISO14001 can also be seen as an implementation tool to allow companies to meet the targets specified under the Greenhouse Challenge and to implement the Code's principles. That is, the three voluntary approaches complement each other, as they define the broad principles for environmental management, define specific targets (or create requirements to define such targets) and provide an implementation framework. However, none of the voluntary approaches actually sets targets for companies. Rather, companies are free to define their own targets for environmental performance. Consequently, the primary purpose of each of the voluntary approaches can be seen as to facilitate companies in establishing the management systems and processes required to meet self-defined targets. As noted by mining industry representatives interviewed for this research:

ISO14001 is simply an implementation tool. The specific targets that are to be met are set by legislation, by the company itself and by the programmes, e.g. the Greenhouse Challenge, that the company signs up to.

Not every company is thinking about ISO14001 certification. ISO14001 can be seen as a filing cabinet. Of itself, it does not drive performance. The Code adds real value to ISO14001 by providing a direction to companies regarding the outcomes that are to be achieved.

The development of an EMS was seen as enabling the company to meet some of the requirements of the company's environmental policy as well as the requirements of the MCA's Code.

The implementation requirements of the different voluntary approaches are reasonably well aligned. While not explicitly referencing ISO14001, the Code has been designed to integrate with ISO14001. For example, the Code Implementation Survey details the relationship between the Code and the elements of the ISO14001 Standard for Environmental Management Systems. Even though the Greenhouse Challenge does not require companies to state how they propose to manage greenhouse gas emissions, an indication of the Australian Greenhouse Office's (AGO's) thinking was given in an early



Table 8.1 Comparison of code elements

	ISO14001	Greenhouse Challenge	MCA Code <sup>a</sup>
Policy: Regulatory compliance	X		
Policy: Continuous improvement	X	X	X
Policy: Pollution prevention			X
Policy: Sustainable development in decision-making			X
Policy: Specific performance requirements			
Identify environmental issues	X		X
Identify legal and other requirements	X		X
Set objectives and targets	X	X	X
Establish management plan	X	X	X
Define roles, authorities and responsibilities	X		X
Employee training	X		X
Establish and document procedures	X		X
Communications (internal and external)	X		X
Emergency response systems	X		X
Performance monitoring	X		X
Corrective action	X		X
Records	X		X
Auditing	X		X
Management review	X		X
Report performance		X	X
Verification of report		X	
Community consultation			X

*Note:* a. The Code requirement to establish management systems consistent with current standards can be interpreted as referring to the broad requirements of ISO14001.

version of its inventory verification guidelines, which recommended that the verification process should also involve the assessment of the management system implemented to manage greenhouse gas emissions, and that the principles of ISO14001 should guide this part of the assessment. It is also relevant to note that the scope of ISO14001 is generally taken by certification bodies as encompassing all of the external requirements that a company has to meet, both voluntary and mandatory. That is, at least in theory, the EMS certification process should provide some level of assurance or certification regarding corporate compliance with other voluntary initiatives. Finally, the inclusion of public environmental reporting as a Code requirement provided a mechanism for addressing one of the key areas of criticism of ISO14001 (namely the absence of external reporting requirements). By adopting ISO14001 as an Australian Standard, the potential for the inclusion of reporting requirements in the Standard was effectively removed, as there are no signs that ISO14001 will be adapted to include reporting and the requirements for international consistency mean that Australia is unlikely to change the Australian Standard unless the ISO standard is altered first. This example (and others that can also be seen in Table 8.1, such as the Greenhouse Challenge requirements for Cooperative Agreement verification, and the Code's principles relating to community consultation) demonstrates that, at least in theory, voluntary approaches can be combined in a manner that allows for the weaknesses or limitations of individual voluntary approaches to be overcome.

### **Codes in Practice**

The combination of the three voluntary approaches in the mining sector suffers from the same limitation as the three in isolation, namely that companies can set their own targets for themselves. Even in the Greenhouse Challenge, it is ultimately the companies that define the targets that are to be met. A related issue is that of economic efficiency. From discussions with mining industry representatives, there is no evidence that participation in any (or, indeed all) of the three voluntary approaches has altered the environmental decisions that companies have taken. That is not to say that the industry's performance has not improved. However, participation in the various voluntary approaches seems to have had little or no effect on performance, with the main drivers coming from regulation and stakeholders such as local communities and NGOs. A cynical interpretation could be that participation in the voluntary approaches is intended to deflect demands for improved performance. A more positive interpretation could be that the voluntary approaches in combination, in particular the role of ISO14001 as an implementation tool, help assure the quality of implementation (or that the

self-specified performance targets are met). As noted above, there is evidence that EMSs have enhanced the ability of organizations to ensure regulatory compliance (and compliance with other requirements such as codes of conduct) and have also allowed companies to identify opportunities for cost-effective performance improvements. Thus, the combination of voluntary approaches may lead to more dependable outcomes. However, this is not guaranteed. For example, while the Code is intended to apply to all operations of signatory companies, irrespective of where the operations are located, concern has been expressed that signatories are not applying it to all of their activities, in particular when operating overseas. That is, the application of both ISO14001 and the Code to the mining industry has not addressed all of the issues around free-riders.

With respect to transaction costs, there are advantages and disadvantages to companies signing up to multiple voluntary approaches. The advantage is that different voluntary approaches can enhance the ability of companies to manage their environmental issues effectively. This is perhaps most clearly illustrated by companies with ISO14001 certification. The nature of such management systems is that they can relatively easily be adapted to encompass other environmental issues. For example, ISO14001 can provide an implementation framework for the Greenhouse Challenge, thereby precluding the need to establish separate management systems and processes simply to address greenhouse gas issues. Consequently, the incremental costs of participating in another voluntary approach may be minimized. The disadvantage is that, inevitably, voluntary approaches do impose transaction costs on companies and, as a general rule, the greater the number of voluntary approaches, the greater the transaction costs. While careful design and implementation can minimize these costs (for example, through building on or aligning with existing management systems), some increases are inevitable. For example, for companies with certified EMSs, the additional costs associated with participation in the Code could include negotiation costs (for participating in the Code), internal capacity-building (to ensure that the Code requirements are understood and can be met), reporting costs (both public environmental reporting and the Code implementation survey) and participation in related industry and broader debates.

There is some evidence that multiple codes may enhance soft effects, although these soft effects are primarily driven by the nature of the individual approach. For example, the mining industry has worked together on issues such as climate change and in debates around environmental management systems. The Code has provided the mining industry with a forum for at least some of these discussions. However, the additional soft effects appear to be marginal in the context of the many other environmental pressures acting on the industry.

Finally, firms' participation in multiple voluntary approaches appears to offer the potential for enhanced enforcement within the regulatory space. Each of the voluntary approaches introduces new 'regulators'; the MCA, the Australian Greenhouse Office and certification bodies all have roles in helping to ensure compliance. In the case of EMS certification bodies, this enforcement role extends to assessing compliance with other voluntary approaches. Furthermore, the public reporting requirements of the Code envisage that both peer pressure and public pressure can be brought to bear on the mining industry. This pressure may be strengthened through the rewards for participation (that is, the award of a logo and other promotional benefits) and the potential for withdrawal of these rewards in the event of non-compliance or withdrawal. While this potential for enhanced enforcement processes is an interesting outcome, it is not clear that this has had a substantial effect in practice. Perhaps more importantly, the strengthening of enforcement is unlikely to address issues of free-riding, in particular free-riding through non-participation in the various voluntary approaches.

## CONCLUDING COMMENTS

This book started by juxtaposing the views of the proponents and opponents of voluntary approaches, and highlighting the very significant differences in these views. As discussed in the early chapters, the academic literature on voluntary approaches is limited and, in many cases, far too discipline-specific. Consequently, neither the views of protagonists in debates around environmental policy instruments nor the academic literature allow for definitive conclusions to be drawn about the merits of voluntary approaches or of the role that can be played by voluntary approaches in public policy.

So, what have the case studies proved? In many ways, the conclusions from the case studies confirm the ambiguity in the literature and, at least on the surface, appear to partially support the positions of both the proponents and opponents of voluntary approaches. Turning first to the arguments of the proponents, it can be concluded that the case studies provide some evidence that voluntary approaches can be effective and can provide economic and other benefits. However, the stronger claims made by proponents cannot be said to be supported by the evidence available. The reported environmental outcomes cannot be relied upon (that is, they lack dependability); they appear to be less than those that could be achieved from other approaches to policy instruments, and the evidence for financial and other benefits is primarily anecdotal. A critical issue in all three voluntary approaches is that none has been designed to gather substantive and credible environmental, economic or other performance data. Consequently, while the participants in the various

voluntary approaches have argued that there are benefits, it is by no means clear that these assertions can be supported by substantive, robust evidence.

The case studies provide greater support to the opponents of voluntary approaches. Certainly, the absence of credible data on environmental or economic performance improvements and the criticisms of the manner in which public participation is structured in all three voluntary approaches lends strong support to arguments around the ineffectiveness of voluntary approaches. This does not, however, mean that the arguments of opponents can be considered to be proven. It is frequently easier to argue that a specific solution is not the best in terms of the criteria chosen than to argue that it is the optimal approach. Opponents of an approach can use the uncertainties around what the effects of other policy instruments targeted at the same issue would have been to bolster their arguments. A further important point is that the undistinguished history of voluntary approaches is not a *de facto* argument that they are inevitably doomed to failure or ineffectuality. As discussed above, it is possible to design and implement voluntary approaches that are credible, work effectively and provide substantive environmental, economic and other benefits. Of course, this relies on participants being willing to take the design recommendations above seriously and, in practice, on the existence of sufficiently strong enforcement processes to ensure performance and to address issues around free-riders.

Overall, the evidence from the literature and the case studies presents fundamental challenges for the proponents and opponents of voluntary approaches. At least in theory, voluntary approaches are an important complement to traditional command and control approaches to regulation, as they can allow new issues to be addressed, potentially enhance corporate accountability and may help companies to internalize environmental costs. Given the complexity of environmental issues, the pressures of globalization, the desire of many governments to withdraw from certain aspects of social and environmental policy and the backlash against command and control approaches to regulation, it is likely that voluntary approaches will become an increasingly important part of the environmental policy instrument armoury. However, the inherent weaknesses of voluntary approaches, the paucity of success stories and the limited evidence of economic and competitiveness benefits should make governments very reluctant to rely on voluntary approaches as the primary policy response to environmental problems.

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# Index

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- acceptability
  - of Australian Minerals Industry Code for Environmental Management 156–9
  - as evaluation criterion for policy instruments 7–13, 28
  - of Greenhouse Challenge 123–5
  - of ISO14001 87–90
  - of voluntary approaches 48–9, 173–4
- Accredited Licensing Scheme (Victoria) 68, 82, 89
- AGO *see* Australian Greenhouse Office
- Alcoa 144, 180
- Aurora Gold 146
- Australia
  - climate change policy 101–2, 104–6
  - economic overview 63
  - energy market reform 128–9
  - energy policy 129
  - environmental attitudes 64
  - environmental policy instruments 67–8
  - greenhouse gas emissions *see* National Greenhouse Gas Inventory
  - key environmental issues 66–7
  - political structure 63
- Australian Aluminium Council 126, 180
- Australian Bureau of Agricultural and Resource Economics (ABARE) 126
- Australian Greenhouse Office 104, 110, 111, 118
  - role in Greenhouse Challenge 109
- Australian Industry Greenhouse Network (AIGN) 125
- Australian Minerals Industry Code for Environmental Management 3, 68
  - Acceptability 156–9
  - accidents and incidents 145–8
  - as argument against regulation 156–7
  - compared to ISO14001 and Greenhouse Challenge 181–3
  - Code Guidance Notes 141
  - community dialogue 156
  - competitiveness effects 152–3
  - drivers for adopting Code 135–6
  - economic efficiency 151
  - environmental effectiveness 141–51
  - External Environmental Advisory Group 140–41, 143, 157, 161, 172
  - External Sustainable Development Advisory Group 161
  - geographic scope 139
  - inclusiveness and public participation 155–6, 172
  - innovation 154–5
  - objectives 136–9
  - performance data availability 141–2
  - performance targets 148
  - principles 137
  - public environmental reporting 139, 143–6
  - register of signatories 140
  - requirements for signatories 139–41
  - requirement to be a member of MCA 139–40
  - soft effects 153–4
  - transaction costs 152
  - verification 142–3
  - WWF review of public environmental reports 142–3
  - see also* mining; Minerals Council of Australia
- Australian Petroleum Production and Exploration Association 125
- Ayres, Ian 53
- bargaining 41
- barriers to environmental improvements 26–7
- Bendigo 180

- Best Practice Environmental Licensing Scheme (Western Australia) 89
- BHP 126, 143–5, 146–7, 151, 180
  - Ok Tedi 133, 146–7, 159
- Bounded rationality 26–7
- Braithwaite, John 53
- BS7750 70
- Business and Industry Advisory Council 48
- business as usual 17–18, 111–12, 176
- Business Council of Australia 126
  - Principles of Environmental Management 68
- carbon dioxide 46, 99
- carbon leakage 102
- Cement Industry Federation 125
- climate change
  - aerosols 98
  - economic impacts 98–9
  - greenhouse effect 97–8
  - international policy responses 99–101
  - science 97–8
- Coase theorem 23
- Code of Conduct Bill (Australia) 157, 159
- command and control 3, 33–4
  - in Australia 67
  - in combination with other policy instruments 52
- competitiveness effects
  - of Australian Minerals Industry Code for Environmental Management 152–3
  - as evaluation criterion for policy instruments 7–13, 24–5
  - of Greenhouse Challenge 119–20
  - of ISO14001 84–5
  - of voluntary approaches 45–6, 170
- Commission of the Parties *see* United Nations Framework Convention on Climate Change
- Consolidated Rutile Limited (CRL) 139, 144
- Corporations Law (Australia) 73–4, 159
- cost–benefit assessment 21–3
  - discount rates 20–21, 29–30
- CO<sub>2</sub> *see* carbon dioxide
- Department of Agriculture, Forestry and Food 125
- Department of Industry, Science and Resources 125
- Dome Resources 147, 159
- due diligence 91–5
- dynamic efficiency 111–12
- Eco-Management and Auditing Scheme
  - compared to ISO14001 82–3
- economic efficiency
  - of Australian Minerals Industry Code for Environmental Management 151
  - as evaluation criterion for policy instruments 7–13, 18–23
  - of Greenhouse Challenge 115–17
  - of ISO14001 81–4
  - issues in assessing 21–3
  - of voluntary approaches 43–5, 168–9, 183–4
- economic instruments 34–6
  - in Australia 67–8
  - in combination with other policy instruments 51–2
- electricity
  - prices 128–9
- Electricity Supply Association of Australia Code of Environmental Practice 74
- EMAS *see* Eco-Management and Auditing Scheme
- Energy Smart Business programme 117, 118
- emissions estimation 114–15
- emissions trading 35–6, 106, 119
- enforcement pyramid model 53–8, 179–80
- environmental effectiveness
  - of Australian Minerals Industry Code for Environmental Management 141–51
  - as evaluation criterion for policy instruments 7–18
  - of Greenhouse Challenge 110–15
  - of ISO14001 73–80
  - issues in assessing 16–17
  - of voluntary approaches 39–43, 167–8, 183–5

- environmental expenditures
  - expected rates of return 84, 116–17
- environmental management systems
  - costs of developing, implementing and maintaining 81–2
  - see also* BS7750; EMAS; ISO14001
- environmental externalities 18–19
- environmental policy instruments 33
  - in Australia 67–8
  - in combination 51–9, 180–85
  - see also* command and control; economic instruments; voluntary approaches; information-based approaches
- Environment Protection Agency (Commonwealth) 135
- Environmental Protection and Biodiversity Conservation Act (Australia) 65
- EPA v Ampol* 94
- ERA/North Ltd 146
- Esmeralda Exploration 147–8, 159
- evaluation of policy instruments 6–30
  - see also* acceptability; competitiveness effects; economic efficiency; environmental effectiveness; inclusiveness and public participation; innovation; soft effects; transaction costs
- External Environmental Advisory Group
  - see* Australian Minerals Industry Code for Environmental Management
- Exxon 126
- free-riders
  - in voluntary approaches 42, 168
- Friends of the Earth 29
- Global Mining Initiative 134
- Global Reporting Initiative 141
- global warming *see* climate change
- Global Warming Potential (GWP) 97
- Greenhouse Gas Abatement Programme (GGAP) 105, 120
- greenhouse gases 97–100
  - see also* carbon dioxide
- Greenhouse Challenge 97–131
  - acceptability 123–5
  - compared to ISO14001 and mining Code 181–3
  - competitiveness effects 119–20
  - Cooperative Agreements 107
  - economic efficiency 115–17
  - emissions abatement as measure of success 114, 167
  - environmental effectiveness 110–15
  - facilitative agreements 108
  - government evaluation (1999) 124–5
  - Greenhouse Allies 109
  - inclusiveness and public participation 122–3, 172
  - industry attitudes 123–4
  - innovation 122
  - inventories 107
  - Joint Consultation Committee 122–3
  - limitations in published data 115
  - logo 108
  - NGO attitudes 125
  - participation as requirement for emissions trading 119
  - Parliamentary Inquiry 124–5
  - performance against targets 110–11
  - regulatory capture 129–30
  - requirements 106–7
  - reporting 107–8
  - role in stimulating emissions abatement 112–13
  - soft effects 120–22
  - targets 114–15
  - Tier 1 and Tier 2 Agreements 107
  - transaction costs 117–19
  - uncertainties in greenhouse emissions estimation 114–15
  - verification 108–9, 119
  - see also* no regrets
- greenhouse sinks 100–101, 103
- Highlands Pacific 147
- Illawarra Coal 180
- imperfect competition 19
- information asymmetries 19–20
- information-based approaches 36–7
  - in Australia 67–8
  - in combination with other policy instruments 51–2



- inclusiveness and public participation
  - of Australian Minerals Industry Code for Environmental Management 155–6
  - as evaluation criterion for policy instruments 7–13
  - of Greenhouse Challenge 122–3, 172
  - of ISO14001 90–91
  - of voluntary approaches 50–51, 171–2
- innovation
  - and Australian Minerals Industry Code for Environmental Management 154–5
  - as evaluation criterion for policy instruments 7–13, 27–8
  - and Greenhouse Challenge 122
  - and ISO14001 87
  - and voluntary approaches 47–8, 171–2
- Intergovernmental Agreement on the Environment 64, 66
- Intergovernmental Panel on Climate Change 98, 99
- International Council on Mining and Minerals 134–5
- Sustainable Development Principles 135, 161
- ISO14001 69–96
  - acceptability 87–90
  - certification 70, 72–3, 79–80, 87–8
  - compared to EMAS 82
  - compared to the Greenhouse Challenge and the mining Code 181–3
  - competitiveness effects 84–5
  - data availability 73–5
  - due diligence 92–5
  - economic efficiency 81–4
  - environmental effectiveness 73–81
  - innovation 87
  - inclusiveness and public participation 90–91, 172
  - key elements of ISO14001 70–73
  - NGO criticisms 89–90
  - pilot programme in Australia 70
  - and regulation 91–2
  - and regulatory compliance 75–6
  - as regulatory requirement 82, 91–2
  - soft effects 85–6
  - transaction costs 81–4
- ISO14000 series standards
  - ISO14004 72
  - ISO14010 72
  - ISO14011 72
  - ISO14012 72
- Kakadu 146–7
- Kyoto Protocol 100–101, 124, 159
  - Clean Development Mechanism 100
  - Joint Implementation 100
- liability for environmental offences 69
- Load-Based Licensing 159
- Managing Energy for Profits 109, 116, 118, 119
- Measures for a Better Environment 105
- MEGABARE 126
- mining
  - environmental impacts 132
  - greenhouse gas emissions 145
  - industry interpretations of sustainable development 150–51
  - industry involvement in drafting environmental legislation 160
  - industry opposition to environmental legislation 159, 162
  - industry reputation 133
  - international mining industry 132
  - NGO performance expectations 149–50, 158
  - public attitudes 132–3
- MIM 143–4, 180
- Minerals Council of Australia 172
  - ability to enforce Code 140
  - Sustainable Development Report 143, 145
- Mining Ombudsman *see* Oxfam
- Community Aid Abroad
- Mining, Minerals and Sustainable Development (MMSD) Project 134–5, 157, 160, 162
- monitoring of voluntary approaches 176
- monopolies 19–20
- Nabalco 144, 180
- National Carbon Accounting System 104
- National Cleaner Production Demonstration Project 116

- National Environment Protection Council 64
- National Environment Protection Measures 64, 159
- National Forests Policy 64
- National Greenhouse Gas Inventory 102–5, 113
- National Greenhouse Response Strategy 104
- National Greenhouse Strategy 64, 66, 105
- National Heritage Trust 66
- National Oceans Policy 64, 66
- National Packaging Covenant 68
- National Pollutant Inventory 16, 64, 67, 73
- National Strategy for Ecologically Sustainable Development 64–7
- National Strategy on Biodiversity 166
- negotiated agreements 4, 45–6
- no regrets 104, 115
- Normandy Mining 180
  
- Oxfam Community Aid Abroad 147
- Mining Ombudsman 155
  
- Pasminco 145, 151
- Pigou 19
- Placer Dome 180
- Plastics and Chemicals Industry Association (PACIA) 109, 116
- pollution
  - as measure of environmental performance 174–5
  - uncertainties in estimating emissions 16–17, 114–15
- private agreements 4
- public attitudes to mining 132–3
- public environmental reporting 73–5, 143–6, 176
  - in Australia 74
  - data quality issues 141–2, 145–6
  - see also* Australian Minerals Industry Code for Environmental Management
- public goods 19
- public participation *see* inclusiveness and public participation
- public voluntary agreements 4
  - regulatory capture 14, 41–2, 76, 129–30
  - regulatory overload 178
- Regional Forests Agreement 66
- Renewable Energy (Electricity) Act 131
- Renewable Energy (Electricity) (Charge) Act 131
- Renewable Energy (Electricity) Regulations 131
- Responsible Care
  - in Australia 68, 74
  - in USA 39–40, 44, 49
- Rio Tinto 126, 146–7, 180
- Ross Mining 146
- R v Bata Industries* 92, 94
  
- Safeguarding the Future 104
- soft effects
  - of Australian Minerals Industry Code for Environmental Management 153–4
  - as evaluation criterion for policy instruments 7–13, 25–7
  - of Greenhouse Challenge 120–22
  - of ISO14001 85–6
  - of voluntary approaches 46–7, 170–71, 184
- Standards Australia 70
- static efficiency 111–12
- State of the Environment Reporting 66
- Statistics Norway 29
- Statoil 126
- sustainable development 14–15, 20–21, 66–7
- Sustainable Energy Development Authority 117–18
  - see also* Energy Smart Business programme
  
- Thiess 139, 180
- Tragedy of the Commons 19
- transaction costs
  - of Australian Minerals Industry Code for Environmental Management 152
  - as evaluation criterion for policy instruments 7–13, 23–4
  - of Greenhouse Challenge 117–19
  - of ISO14001 81–4
  - of voluntary approaches 44–5, 169–70, 184

- unilateral commitments 4, 45–6
- United Nations Framework Convention on Climate Change 99–101, 130
  - Commission of the Parties 100, 102
- verification of public environmental reports 142–3
- voluntary approaches
  - acceptability 48–9, 173–4
  - as arguments against regulation 168, 173
  - in Australia 67–8
  - bargaining 41
  - in combination with other policy instruments 51–2, 59, 180–85
  - competitiveness effects 45–6, 170
  - definition 4
  - design 175–7
  - economic efficiency 43–4, 168–9, 183–4
  - in energy policy 126–8
  - enforcement 50, 177, 180
  - environmental effectiveness 39–43, 167–8, 183–5
  - free-riders 42
  - inclusiveness and public participation 50–51, 171–2
  - innovation 47–8, 171–2
  - key features 37–9
  - limitations in targets 167–8
  - monitoring 176
  - regulatory capture 41–2
  - role in implementing public policy 58–9, 74, 177–80
  - soft effects 46–7, 170–71, 184
  - transaction costs 44–5, 169–70, 184
  - transparency 50
  - typology 4
- welfare economics 18
- WMC 180
- World Business Council for Sustainable Development 16
- WWF 49, 157–8
  - review of mining industry reports 142–3