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Managing environmental regulations for the 21st century: challenges and opportunities in an Australian industry context

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Managing environmental regulations for the 21st century: Challenges and opportunities in an Australian industry context

ABSTRACT

The growing awareness of the deleterious effects of climate change is leading to greater environmental regulation of industries around the world. This paper argues that there are difficulties in identifying and addressing environmental externalities in the context of developing a mandated approach to environmental issues. Furthermore, environmental regulation in Australia is complicated by the federal system of government, in which different environmental impacts are managed at local, state and/or federal levels. This paper analyses the problems associated with enacting environmental regulation and implementing environmental policies in a federal system. At an industry level, more self-regulation and co-regulation may overcome these problems and allow industry to better guide and influence the regulation process. At a policy level, the case for regulatory harmonisation as a means to simplify and standardise environmental regulations is examined while, at a theoretical level, the need for further research into alternatives to regulation is highlighted.

Preferred Stream: Managing in the Pacific century, Sustainability and social issues in management, Strategic management

Keywords: environment, sustainability, environmental externalities, government, harmonisation, regulatory reform

INTRODUCTION

The interest in and emphasis on the environment in mainstream popular and political discourse has increased considerably since the Kyoto Protocol was negotiated by the international community in 1998. Ratified by Australia in December 2007, the Rudd Government has committed to reducing national greenhouse gas (hereafter GHG) emissions by 60 per cent of 2000 levels, by 2050 (AGO - Australian Greenhouse Office 2006). Industry and government will face mounting pressure over the coming years to demonstrate where these emissions cuts will be made. The Carbon Pollution Reduction Scheme (CPRS) commencing in 2010 is the Australian Government's central policy initiative to achieve its aspirational GHG emissions reduction target. It is underpinned by an emissions reporting scheme under the *National Greenhouse Reporting Act 2007*, the most notable of the climate-change related environmental regulations to date. Starting from 1 July 2008, organisations meeting certain (declining) GHG emission thresholds are required to provide accurate GHG emissions information.

However, GHG emissions are only a small part of the suite of environmental issues that need to be addressed. In policy terms, environmental issues may be categorised as broadly aquatic, terrestrial or atmospheric (ASEC - Australian State of the Environment Committee 2001). Although environmental issues are interconnected and their management or policy regimes are not easily untangled, there is a tendency to classify, measure, and regulate them separately. In Australia, for instance, the environmental impacts of firms are commonly defined and regulated in terms of sustainable development, GHG emissions, air pollution emissions, energy use, noise emissions, waste movement, site contamination, water pollution, and biodiversity conservation.

The volume and reach of the regulation of business activities, including its environmental impacts, has expanded rapidly over recent years. While regulation is an important vehicle for achieving national economic, social and environmental (i.e., triple bottom line) objectives, it was argued by the Regulations Taskforce (2006) that much regulation is poorly justified and implemented. The thorniest

problem emanating from the rise in climate change policy enthusiasm is that it may result in regulatory over-burdening or unilateral decision-making on the part of regulators, with the potential result of reducing confidence levels with respect to doing business in Australia. This situation could add further levels of complexity in dealing with climate change and sustainability and thereby reduce efficiency and discourage investment in key sectors, such as transport and utilities that realise important public values (Koppenjan, Charles & Ryan 2008). This paper examines the issue of using regulation to address environmental impacts of industry within the context of Australia's multi-jurisdictional system of government. It then considers ways in which industry management and policy makers can develop effective responses to these issues.

THE PROBLEM WITH ABATING ENVIRONMENTAL EXTERNALITIES

Uncertainty continues to pervade the science, geopolitics and, notwithstanding the Stern Review (2006), the economics of climate change abatement (PC 2007b). In short, most industries generate a range of significant environmental effects. These effects are known as externalities or spillovers and include GHG emissions, air pollution, noise, waste, and site contamination. The presence of externalities is said to indicate failure of the market to achieve social efficiency (McTaggart, Findlay & Parkin 2003). Since the individual, firm or government creating the externalities often does not have an incentive to take third parties into account, business activity levels where external costs are present and not adequately accounted for may be higher than socially efficient, thus prompting government intervention (Lévêque 1999). The mere observation of external impacts, however, is not sufficient to justify policy intervention (PC - Productivity Commission 2006). This is because, according to economic theory, there is an efficient level at which to cause externalities (Siebert 1992). Determining the efficient level of environmental externalities raises two main problems (PC 2006):

- Externalities may vary in magnitude in different locations and at different times and are often created by multiple sources; for instance, external costs of freight transport are generated jointly with passenger transport and are much higher in urban than in rural areas, and are lower for sea or rail freight than for air or road freight.

- Measuring the extent to which externalities have been internalised adds to the difficulties of obtaining appropriate estimates of external costs to guide policy formulation; failure to take these adjustments into account leads to potentially erroneous policy conclusions.

Even when externalities relevant to policymakers are appropriately identified, the desirable policy responses require careful consideration. Policy responses aim to reduce externalities (e.g., emissions) in two complementary ways: first, by means of an emission abatement, which requires the use of less-polluting inputs; second, by switching to a cleaner technology (Baudry 2000). There is no one best way to achieve these aims. Rather, there are at least four main externality abatement policy options: (1) regulation, (2) a single (average) or direct abatement charge, (3) subsidising lower externality-intensive alternatives, and (4) incentive-compatible pricing.

Many solutions to the problems of market failure, including the presence of externalities, come in the form of government regulation (McTaggart, Findlay et al. 2003). While regulations have achieved reductions in externalities, it is not clear that they have achieved efficient levels of externality abatement, or have done so at least cost (PC 2006). Regulation imposes costs on those creating externalities by requiring higher-cost technology or methods of operation. These costs, however, are often not transparent (Wills-Johnson 2006b). There is also uncertainty regarding the benefits of reducing externalities, and the level at which further reductions would not be socially efficient. Hence, externality abatement through regulation could be pushed to the point where marginal benefits are less than marginal costs, and where further reductions could decrease social welfare (PC 2006). In addition, an unnecessary regulatory burden is associated with many environmental regulations. This state of affairs detracts from the net benefits potentially available to society. Regulation in Australia, on the whole, is widely held to be excessive and costly. It is driven by costs that are 'off-budget', diffuse and hard to measure, and is generally devised within policy 'silos' (Regulation Taskforce 2006). Furthermore, it has been estimated that, if regulatory reforms lowered compliance costs by one-fifth from conservatively estimated levels, a cost saving of around AU\$7 billion (and a greater resultant increase in GDP) could be achieved (PC 2007a).

A comparison of regulation and some other options for reducing environmental externalities was undertaken by the Productivity Commission (2006). Studies considering the use of direct abatement charges include those by Shafik (1994) and Eskeland and Harrison (1997). Kvendokk, Rosendahl and Rutherford (2004) have also looked at the effect of subsidising lower-externality-intensive alternatives. A fourth possible approach to reducing environmental externalities is to encourage firms to disclose their cost structure for internalised and non-internalised externalities as a means to overcome information asymmetries (Laffont & Tirole 1993). Referred to by Baron and Myerson (1982) as 'incentive-compatible pricing', this represents an alternative mechanism for achieving the goals of regulation (Wills-Johnson 2006b). To sum up, all three conventional abatement policy approaches might be regarded as flawed, while the novel, fourth approach requires more research and testing. The direct charge approach is preferred by the Productivity Commission (2006), which dismisses the use of regulations unless they are performance based and have passed a rigorous cost-benefit analysis to determine the most efficient options. In relation to GHG emissions, the Productivity Commission (2007b) recommends that existing regulations that substitute for emissions trading should be discontinued, especially in light of the expected introduction of the CPRS. Meanwhile, as is outlined later in this paper, industry faces increasing government regulation seeking to address GHG emissions and other environmental externalities..

THE PROBLEM WITH ALLOCATION OF REGULATION UNDER FEDERALISM

Another critical dimension of environmental regulation in Australia relates to the regulatory issues associated with the federal system of government and its three governmental tiers. Under the Australian model of federalism, the state and territory governments' retain significant regulatory powers. Since policy must be negotiated between and across different levels of government, vertically between federal, state and local governments, and horizontally between states or local authorities, there is often considerable tension between the various spheres of government, while a myriad of committees and working parties are needed to achieve cooperation (O'Farheallaigh, Wanna & Weller 1999). The potential for regulatory overlap and contradiction between various jurisdictional

requirements is immense. In this setting, regulation often appears to be excessive (Regulation Taskforce 2006).

Whether government regulation should be decentralised or centralised is a subject of much debate (McTaggart, Findlay et al. 2003). Indeed, there are costs and benefits associated with each route, as set out in Table 1. On the one hand, it is argued that deciding how to allocate resources required to deliver local public goods (such as local roads) will be more efficient if they are left to those living in the area (Besley & Coate 2003; Elster 1991), although there is also the danger of strategic misrepresentation when local governments compete for funding from higher sources (Bruzelius, Flyvberg & Rothengatter 2002). On the other hand, decisions regarding national uniformity are best engendered by decision-making through a centralised government (Inman & Rubinfeld 1997), so long as an adequate oversight of funding proposals is carried out (Flybjerg & Bruzelius 2003). This amounts to policy or regulatory harmonisation, i.e., a reduction of the differences in laws and policies between two jurisdictions through the adoption of similar laws and policies, mutual recognition and compatibility of different laws, or coordinative action (Leebron 1997) and, ultimately, national-based regulators (BTRE - Bureau of Transport and Regional Economics 2006).

Table 1 Costs and benefits of regulatory diversity versus harmonisation

	Regulatory diversity* Multi-jurisdictional regulators	Regulatory harmonisation* Single national regulator
Cost to regulator of making and enforcing regulations	- <i>Higher</i> : Duplicated bureaucracy (e.g. staff)	+ <i>Lower</i>
Compliance cost to firms	- <i>Higher</i> : Additional bureaucratic requirements (e.g. more staff, training, consultants) required for dealing with each regulator, inhibiting operational efficiency	+ <i>Lower</i>
Opportunity costs to firms	- <i>Higher</i> : scarce management resources directed to oversight of regulatory compliance, impeding management-led entrepreneurship and innovation and, ultimately, over firm performance	+ <i>Lower</i>
Regulatory ambiguity and uncertainty	- <i>Higher</i> : Regulatory gaps and overlaps at interfaces, increasing investment risk to industry and, ultimately, hampering the development of national systems	+ <i>Lower</i>
Regulatory effectiveness <i>within</i> jurisdiction	+ <i>Higher</i> : Proximity to regulator with fewer responsibilities over other firms makes it more receptive to idiosyncrasies of the firm being regulated and the market place within which it	- <i>Lower</i> : Wider portfolio of firms and less familiar with local circumstances.

	Regulatory diversity* Multi-jurisdictional regulators	Regulatory harmonisation* Single national regulator
	operates (i.e., its particular logistics chain). Hence, better local coordination of logistics chains is ensured. Firms operating within a small defined area may find it easier to conform to requirements.	
Regulatory effectiveness <i>between</i> jurisdictions	- <i>Lower</i>	+ <i>Higher</i> : With wider portfolio of firms the regulator is more familiar with broader issues and nationwide coordination is assured. Firms with interstate operations will find it easier to conform.
Regulatory innovation (through competition and cooperation)	+ <i>Higher</i> : The opportunity for regulators to learn from one another encourages experimentation with and adoption of leading regulatory practices. Interstate firms may also benefit by lobbying for adoption of better regulation where systems have been proven to work.	- <i>Lower</i>
Risk of regulatory error	- <i>Lower</i> : The possibility to experiment with different approaches give regulators to pick-up error.	+ <i>Higher</i>

* Note: '+' represent areas of potential advantage; '-' represent areas of potential disadvantage

(Source: developed for this research)

The costs and benefits of regulatory fragmentation (i.e., presence of multiple regulators) versus regulatory harmonisation (i.e., single national regulator) are difficult to quantify. Various guidelines are offered in the literature. Where similar conditions prevail, streamlined regulatory structures that remove several regulatory interfaces, i.e., regulatory consistency, should occur (BTRE - Bureau of Transport and Regional Economics 2006). Microeconomic theory suggests that the greater the spillover between jurisdictions, the stronger the case for involvement of a higher level of government (McTaggart, Findlay & Parkin 2003). Similarly, Lowe (1994) recommends that policy matters directly impacting on the national and global interest, such as those pertaining to transport or the environment, should be regulated accordingly. In reality, a trade-off or balance point exists between fragmentation and centralisation (Wills-Johnson 2007). Rather than looking for the balance point itself, policy makers and industry would do better to develop a framework within which it can be found, as is discussed further below.

To ascertain how environmental regulation in Australia is presently allocated, Table 2 summarises the main government regulation in terms of legislation and regulating department for 14 environmental issues and by regulatory jurisdiction, i.e., Commonwealth and state/territory (illustrated for NSW).¹

Table 2 Australian environmental legislation and regulator by function and jurisdiction

Environmental issue	State/Territory (multi-jurisdictional) illustrated for NSW only	National (single-jurisdictional)
General	<ul style="list-style-type: none"> • <i>Protection of the Environment Operations (PEO) Act 1997</i> – administered by NSW Department of Environment and Climate Change (DECC). • <i>NEPC (NSW) Act 1995</i> – to enable NEPMs. 	<i>National Environment Protection Council (NEPC) Act 1994</i> to Set up NEPC, a non -regulatory body with authority to develop National Environment Protection Measures (NEPMs) that may be implemented by states/territories.
Sustainable development	<ul style="list-style-type: none"> • <i>Environment Planning & Assessment Act (EP&A) 1979</i> and <i>EP&A Regulations 2000</i>. • <i>PEO Act 1997</i>. • <i>State Environmental Planning Policy (SEPP) 2007, Local Environmental Planning (LEP) EP&A 1979</i> and <i>EP&A Regulations 2000</i>. All administered by DECC.	<i>Environment Protection and Biodiversity Conservation (EPBC) Act (1999)</i> administered by Department of Environment, Water, Heritage and the Arts (DEWHA) – only applies to seven matters of national significance (e.g., world heritage sites, Ramsar wetlands, nationally threatened species)
Greenhouse gas emissions (e.g. CO ₂ , NH ₄)	None.	<ul style="list-style-type: none"> • <i>National Greenhouse and Energy Reporting (NGER) Act 2007</i> – administered by Department of Climate Change (DCC). • Greenhouse Challenge Plus (GCP) – a co-regulatory initiative administered by Department of Environment, Water, Heritage and Arts (DEWHA)*.
Air pollution emissions (incl. CO and particulates) and toxics emissions (e.g. benzene, aldehydes)	<ul style="list-style-type: none"> • <i>PEO (General) Act 1997</i>- implements the NPI. • <i>PEO (Clear Air) Regulation 2002</i>. All administered by DECC.	<ul style="list-style-type: none"> • National Pollutant Inventory (NPI) 1999 under the <i>NEPC Act 1994</i> - administered by DEWHA. • Other (NEPMs under the NEPC Act: <ul style="list-style-type: none"> ○ Diesel Vehicle Emissions 2001 ○ Air Toxics 2004 ○ Ambient Air 1998.
Ozone	<i>Ozone Protection Act 1989</i> – administered by DECC.	<i>Ozone Protection and Synthetic Greenhouse Gas Management (OPSGGM) Act 1989</i> and <i>OPSGGM Regulations 1995</i> – administered by DEWHA.
Energy usage	No legislation; policies only.	<i>Energy Efficiencies Opportunity Act 2006</i> - administered by Department of Resources, Energy and Tourism (DRET)
Noise	<ul style="list-style-type: none"> • <i>Environment Planning & Assessment Act (EP&A) 1979</i> and <i>EP&A Regulations 2000</i> • <i>PEO Act (1997)</i>. • <i>State Environmental Planning Policy (SEPP) 2007, Local Environmental Planning (LEP)</i>. All administered by DECC.	No legislation; standards and guidelines only.
Water efficiency	<i>Water Act 1912</i> . <i>Water Management Act 2000</i> . Both administered by the Department of Resources.	No legislation.
Waste efficiency	<ul style="list-style-type: none"> • <i>PEO (Waste) Regulation 2005</i> to implement MCW NEPM. 	<ul style="list-style-type: none"> • NEPM on Movement of Controlled Waste (MCW) 1998 under the <i>NEPC Act 1994</i>

¹ A complete inventory of environmental regulation, including quasi-regulation (guidelines, strategies, standards, etc.) is currently under development as part of a project within the CRC for Rail Innovation.

Environmental issue	State/Territory (multi-jurisdictional) illustrated for NSW only	National (single-jurisdictional)
	<ul style="list-style-type: none"> <i>Environmentally Hazardous Chemicals Act 1985.</i> <i>Waste Avoidance and Resource Recovery Act 2001.</i> Administered by DECC.	<ul style="list-style-type: none"> <i>Hazardous Waste (Regulation of exports and imports) Act 1989</i> – administered by DEWHA.
Land contamination	<i>Contaminated Lands Management (CLM) Act 1997</i> ; implements SC NEPM – administered by DECC.	NEPM on Site Contamination (SC) 1999 under the <i>NEPC Act 1994</i> .
Land degradation	<i>Soil Conservation Act 1938</i> – administered by Department of Resources (DR).	No legislation.
Water quality	<i>Sydney Water Act 1994 and associated Trade Waste Agreements.</i> <i>PEO Act 1997 and associated environment protection licences.</i> Both administered by DECC.	No legislation.
Flora and fauna (biodiversity conservation)	<i>Native Vegetation Act 2003</i> - DR <i>Threatened Species Conservation Act 1995</i> – DECC. <i>National Parks and Wildlife Act 1974</i> – National Parks and Wildlife Services (NPWS). <i>Wilderness Act 1987</i> – DECC and NPWS.	<i>EPBC Act 2000</i> – administered by DEWHA; only for areas of national significance.
Pest management (biodiversity conservation)	<i>Noxious Weeds Act 1993</i> – DECC and local government.	No legislation.

* Voluntary reporting, except if for firms receiving fuel excise credits greater than \$3 million.

(Source: developed for this research)

Table 3 provides an additional layer of understanding by presenting government environmental regulators in terms of scope of regulatory function (i.e., single versus multi-functional) and scope of jurisdiction (i.e., state-based or nationwide).

Table 3 Australian government environmental regulators by function and jurisdiction

		Scope of jurisdiction	
		State (multi-jurisdictional)	National (single-jurisdictional)
Scope of regulatory areas	Single	Departments/agencies for: Agriculture Parks and Wildlife Planning Primary industries Resources Transport Waste Management	DCC (NGER Act 2007): GHG emissions. DRET (EEO Act 2006): Energy use.
	Multiple	EPA (ACT) DECC (NSW) DNREA (NT) EPA (QLD) EPA (SA) DEPHA (TAS) EPA (VIC) EPA (WA) Each with own environmental protection legislation and regulations for air, noise, water, waste, land conservation, development, etc.	NEPC (NEPC Act 1994): NEPMs for National Pollutant Inventory, Air Toxics, Ambient Air Quality, Diesel Vehicle Emissions, Site contamination, Controlled waste movement, Used packaging materials. DEWHA (EPBC Act 1999; GCP; OPSGGM 1989): Biodiversity conservation, GHG emissions, ozone and SGG emissions.

(Source: developed for this research)

An analysis of these two tables indicates the following:

- Only four environmental impacts of business are being regulated nationally GHG emissions, ozone, energy usage and biodiversity in relation to matters of national significance only. Requirements in relation to three further environmental impacts are provided at a national level (through National Environment Protection Measures or NEPMs), but are regulated at a state/territory level: air pollution, movement of controlled waste and site contamination.
- Regulation of the remaining environmental issues occurs only within each state/territory: noise, water efficiency, non-movement-related aspects of waste, water quality, land degradation, non-nationally significant sustainable development, non-nationally significant fauna and flora conservation and pest management. The absence of regulations in these areas is particularly problematic for businesses operating interstate, such as transport, which faces a plethora of differing state-based noise-related regulations².
- Some environmental issues are regulated at both a Commonwealth and state/territory level, e.g., sustainable development, ozone, and air pollution. For instance, under the NSW Protection of the Environment Operations (PEO) Act 1997, the NSW Department of Environment and Climate Change (DECC) is also empowered to monitor an organisation's air pollution and GHG emissions. The extent to which DECC has aligned its measures with the NGER system and the National Pollutant Inventory (NPI) is unclear, though an alignment is critical to avoid unnecessary regulatory burden.

Overall, it can be seen that the federal government is playing an increasingly influential role in the management of environment, as witnessed by the EPBC Act 1997, the EEO Act 2006, the NGER Act 2007 and the impending CPRS, which seeks to centralise the reporting responsibilities for business and government bodies in relation to energy use and GHG emissions. Meanwhile the states are also

² For instance, the Protection of the Environment Act 1997 and associated Industrial Noise Policy 2000, State Environment Planning Policy 2007, the Environment Planning & Assessment Act 1979, and associated EP&A regulations 2000 in NSW alone.

expanding their scope of environmental responsibilities, as illustrated by the DECC's regulatory activities in Table 3. As a consequence, the volume of environmental regulation in Australia is growing and its jurisdictional allocation is becoming more complex.

In relation to the efficacy of environmental regulation, business in general is concerned with inconsistency and duplication across jurisdictions, lack of early consultation with business, and inadequate implementation and execution of programs (Regulation Taskforce 2006). Climate change policy, in particular, is considered a "disjointed, fragmented patchwork of measures across sectors and jurisdictions" (PC 2007b, p. viii). The following sections discuss two ways to overcome these problems and move toward regulatory reform.

A FRAMEWORK FOR ASSISTING REGULATORY REFORM

It is widely acknowledged that regulatory problems and their solutions, including those pertaining to environmental regulation, are becoming more complex (e.g. Carroll et al. 2008; McConkey & Dutil 2006). Accordingly, the discourse on regulatory reform is growing in government as evidenced in a host of government agency publications, such as "Rethinking Regulation" (Regulation Taskforce 2006), "Best Practice Regulation" (Office of Best Practice Regulation 2007) and "Optimising harmonisation in the Australian railway industry" (BTRE - Bureau of Transport and Regional Economics 2006). One of the latest efforts to appraise the performance of regulatory reform in Australia is the book "Minding the Gap" (Carroll et al. 2008), which provides a wide range of views by senior public servants, academics and consultants on several aspects of regulatory reform. In the May budget (2008b), the Australian Government committed itself to a simple, timely and consistent approach to economic regulation of significant infrastructure in order to realise Australia's productive potential, yet at the same time safeguard the environment.

However, none of the above-mentioned publications and initiatives has fully investigated the growing burden of environmental regulation imposed on Australian business. The Regulatory Taskforce (2006)

has come closest, but confined its examination of regulations to Australian Government regulation, such as Environment Protection and Biodiversity Conservation Act (1994), the National Pollutant Inventory (1999) and the National Environment Protection Measure for Site Contamination. This absence of inquiry is perhaps explained by the lower relative importance of environmental risks to organisational performance; possibly environmental risk is just emerging as a contentious area for industry and regulators. It is asserted, here, that the need for a thorough reform of environmental regulation is now pressing and requires a systematic assessment of national *and* state-based regulation, as will be discussed in further detail below.

To assist management in achieving environmental regulatory reform in Australia, we propose a simple framework, which is based on work by the Productivity Commission (2007a), the Regulatory Taskforce (2006) and the Office of Best Practice Regulation (2007). It may be used by government, industry or individual organisations to discover and systematically assess existing national *and* state-based regulation and to develop sound reform options. In this way, regulatory duplication or inconsistency may be identified, and instruments that have the potential to promote harmonisation may be determined.

1. Map out (quantify) the regulatory environment of regulations pertaining to the industry in each of the main environmental areas. This inventory provides the basis for subsequent evaluation and development of reform options. As per Tables 2 and 3, it could be organised in terms of (1) environmental area of interest, e.g., GHG emissions, local air pollution, energy use, noise, dust, site contamination, waste, water pollution, conservation and biodiversity; and (2) jurisdiction, e.g., federal, state/territory and local. Unlike the Regulatory Taskforce (2006), which considered only federal regulation or a state or territory regulation that overlaps with federal regulation, an assessment of any reform of environmental regulations should capture regulation for which specific states or territories are solely responsible (e.g., noise-related regulation under the NSW Protection of the Environment Act 1997), since these pose the greatest problems to businesses that operate in multiple states/territories, such as railway operators.

2. Evaluate the regulations identified in step 1 to assess the significance of the unnecessary regulatory burden, and to assess the quality of regulation. As per the Regulatory Taskforce (2006), priority reforms to specific areas of regulation are indicated by the significance of the unnecessary regulatory burden. Unnecessary regulatory burdens are incremental costs that could be eliminated by better regulatory design, administration and enforcement, without detracting from desired outcomes or policy objectives (PC 2007a). The significance of the unnecessary regulatory burden for each of the regulations identified could be assessed in terms of the five potential sources of unnecessary regulatory burden identified by the Regulation Taskforce (2006). These are (1) excessive coverage, including ‘regulatory creep’, (2) regulation that is redundant or not justified by policy intent, (3) excessive reporting or recording requirements, (4) variation in definitions and reporting requirements, and (5) inconsistent and overlapping regulatory requirements.

As demonstrated in Table 1, all industries face different regulations when they operate in more than one jurisdiction. In view of this, interstate firms are most likely to face the consequences of differing standards and regulations. The burden of environmental regulations associated with doing business *interstate* could be assessed using indicators, such as the proportion of unnecessary compliance costs out of total compliance costs for interstate costs or expert assessment of the materiality of inconsistency and duplication. The quality of regulation could be assessed by using benchmarking techniques described in the Productivity Commission’s (2007a) report on business regulation benchmarking. Appropriate performance indicators would need to be developed in consultation with industry, for instance (1) use of regulatory impact statement (RIS) in developing regulation, (2) stakeholder consultation undertaken at all stages of regulatory cycle, (3) complexity of regulation that requires expertise to comply, and (4) consistency in translating federal legislation into state and territory legislation.

3. Develop, appraise and implement regulatory reform options. The previous two steps establish a case for action before addressing the particular regulatory problem. They also provide the basis for

identifying opportunities for reform. A range of feasible reform options should be considered, including self-regulatory, co-regulatory and non-regulatory approaches, and their costs and benefits assessed (Office of Best Practice Regulation 2007). The appraisal process and methodology of environmental regulatory reform options could essentially follow that of any business initiative, such as set out in the Australian Transport Council's National Guidelines for Transport System Management (2006). Priority reforms are also indicated by the practicality of the reform options, i.e., they should be obvious and not insurmountable (Regulation Taskforce 2006) and generate the greatest net benefit for the community (Office of Best Practice Regulation 2007). While expanding the scope of regulatory jurisdiction under review may increase the degree of difficulty of reform, it is critical with respect to working towards an optimal harmonisation of environmental regulations.

In addition to the three-step framework, the appropriate provision of environmental regulation is greatly assisted by intergovernmental cooperation, i.e., effective arrangements at each level of government (Office of Best Practice Regulation 2007). In this way, regulations, policies, guidelines, etc., can be aligned and unnecessary duplication of effort can be reduced. Intergovernmental cooperation also helps overcome the appropriability (spillover) problems resulting from one government receiving the benefits, but having incurred a greater portion of the provision and/or regulation cost (Teece 1992). The Business Council of Australia's (BCA) Charter for New Federalism (2007) calls more forcefully for political leaders to agree to the Charter to strengthen and embed improved federal-state cooperation and reforms. However, as shown in Tables 2 and 3, there are presently several areas of jurisdictional overlap in relation to environmental issues that work against achieving optimal regulatory harmonisation.

INDUSTRY SOLUTION: BETTER SELF-REGULATION AND CO-REGULATION

Since there is no immediate profit incentive, private corporations have traditionally tended to provide too little self-regulation, while governments, on the other hand, have sometimes provided too much, thereby reducing the competitiveness of certain industry sectors and discouraging adequate levels of

investment (Majone 1994). A balance between these two outcomes may be achieved by requiring firms within an industry to provide their own regulation (self-regulation), i.e., control their collective behaviour through a voluntary association of firms (Lennox & Nash 2003), or through the adoption of operational and technical standards, working practices or processes (PC 2006). Government typically does not participate in regulatory development, implementation and enforcement, which in this case is carried out by means of social control at an industry and/or organisational level (Gunningham & Rees 1997). Environmental self-regulation may take a number of forms, including (1) internalisation of externalities, e.g., investing in lower emission technology, (2) organisation-wide environmental management policies and environment management systems as set out in such sources as DEWHA's (2003) guide to triple bottom line reporting, and (3) best-practice environmental management at an industry level through standards, codes of practice and industry agreements and plans.

It is obviously desirable for industry to be pro-active in the arena of better performance, while consumers expect businesses to demonstrate their worth as corporate citizens and prove that they can be trusted to regulate their own practices and act in the best interests of a broad pool of stakeholders (Lesser 2000; Matten & Crane 2005). In Australia, a Joint Parliamentary Inquiry (2006) into corporate responsibility concluded that voluntary sustainability reporting (i.e., pure self-regulation) was more effective than implementing policy to mandate corporate sustainability reporting. Thus it is clearly in management's best interests to work towards the means of effecting multilateral change that coheres with the organisation's established corporate responsibility objectives, yet also minimises the potential for unilateral government legislation that could reduce overall productivity, redirect much-needed investment, and simultaneously stifle competition and reduce market transparency. Effective environmental management and self-regulation is ideally integrated throughout a core business, rather than being turned into a reporting exercise or stand-alone unit (Dillon 2008).

Among a number of widely-recognised international environmental management and reporting frameworks, the Global Reporting Initiative (GRI) provides a useful foundation for environmental self-regulation. Such reporting initiatives allow for internal self-regulatory frameworks/initiatives to

be tested independently against a globally agreed upon set of principles, thereby overcoming one of the biggest obstacles in achieving optimal self-regulation, viz., the impartiality in testing the effectiveness of self-regulatory practices by aiding credibility of the company's reporting (GRI - Global Reporting Initiative 2008).

Despite the above, attracting industry players to participate in a self-regulation program can be problematic, especially since the participating firms are likely to be in competition with each other and are thus inherently self-concerned (Dummett 2008). Indeed, without strict monitoring and sanctioning mechanisms by government (Charles et al. 2008) and/or the industry, there is always the danger, as Lenox and Nash (2003) point out, that poorly performing firms will enter into self-regulation programs as a means to gain the benefits of membership without putting in the required effort. The threat of further government-led regulation may be enough incentive for the industry to self regulate, especially when there is the threat of potentially restrictive (or inappropriate) regulations being implemented (Cowan 2007).

Co-regulation is a third regulation possibility between government regulation and self-regulation. This represents a system in which some of the responsibilities for regulatory development, implementation and/or enforcement are shared between industry groupings and governments. The benefit to management with regard to this option is that it has the potential to provide a useful platform from which to engage in regular and meaningful dialogue with regulators and other government bodies, in addition to other stakeholders. Greenhouse Challenge Plus (GCP) is an example of a voluntary industry-government co-regulatory initiative. Co-regulation possibilities exist with (1) the National Environment Protection Council (NEPC) to develop industry-specific National Environment Protection Measures (NEPMs) for each of the environmental areas under a national regulatory scheme and/or (2) with individual state governments to align existing measures with industry standards or develop new measures both consistent with industry standards and consistent with other state measures. Finding the appropriate mix of government regulation, self-regulation and co-regulation in

environmental matters is challenging, and certainly in need of further research. A useful starting point is to consider their respective costs and benefits, as set out in Table 4.

Table 4 Costs and benefits of government regulation, co-regulation and self-regulation

	Firm self-regulation*	Industry self-regulation*	Business self-regulation*
Time/cost to develop, implement and enforce	+ quick and cheap to set-up.	- requires intra-industry coordination, such as through industry associations/peak bodies.	- requires cross-industry agreement on standards of conduct, which is most time-consuming and costly to set-up.
Effectiveness (in terms of achieving goals)	- economic problem of 'free-riders'.	- loss of autonomy for participating firms - "free-rider" problem, unless all firms in the industry follow suit	- cross-industry agreement on standards of conduct may lack relevance to specific industry environments.
	+ contents controllable by individual firm, hence most competitive advantage possible.	+ establishes a 'level' playing field of competitive conduct. + most effective substitute or complement for direct government regulation. + reduced risk of government-imposed regulation.	+ less vulnerable to anti-competitive objections. + more likely to exert pressure on behaviour of members in the direction of public interest.

* Note: '+' represent areas of potential advantage; '-' represent areas of potential disadvantage

(Source: Adapted from Hemphill 1992; Maitland 1985; Wotruba 1997)

All three forms of regulation offer benefits, whereby co-regulation potentially combines the effectiveness of government regulation with the speed and cost-effectiveness of self-regulation. Government regulation tends to dominate the regulatory landscape, especially in the field of environmental regulation (where regulation exists at local, state and federal levels). However, there appears to be considerable opportunity for organisations and industries to self-regulate, and for industries and government to coordinate regulatory initiatives. Such self- and co-regulation initiatives are likely to provide more effective drivers of regulatory harmonisation and leading practice in industry than multi-jurisdictional government regulation (Eisner 2004).

The incentive, here, is for industry to pre-empt regulatory change that could manifest itself in a potentially unpalatable form, and at the same time set the basis for a future regulatory response that has widespread industry and regulator acceptance, thereby ensuring high levels of compliance. Such industry-led change has occurred recently; for example, in the field of occupational health and safety (OH&S), where a guide to leading practice has been accepted by major constructors, designers and clients in the Australian construction industry (Charles et al. 2008). In effect, industry-led change can

overarch a disparate and confusing regulatory landscape by promoting best practice, thus making conflicting regulatory regimes redundant and prompting reform at a more manageable centralised level (Pillay et al. 2006). Rather than government being the driving force for change, more involvement from industry is beneficial, not just through being consulted, but through actively challenging government policymakers (Wills-Johnson 2006b).

It is important for management to be aware of the potentially negative impacts of mutually deleterious inactivity with regard to environmental performance. On the other hand, it is vital that signatories to any industry-wide attempt to overarch existing (and often jurisdictionally inconsistent) legislation and regulation via the promotion of best practice do so in good faith. The test here is to establish effective means by which such activities can be enforced without recourse to juridification, i.e. the proliferation of law (Blichner & Molander 2005) , which runs counter to the aim of reducing adversarial conduct (de Bruijn & Dicke 2006).

CONCLUSION

It emerges from this research that there are two main approaches for addressing these challenges and working toward achieving optimal harmonisation of environmental regulations: (1) a three-step approach toward environmental regulatory reform based on an assessment of regulatory quantity and quality using benchmarking and, ideally, supplemented with effective inter-governmental cooperation; and (2) systematic self-regulation within organisations and industry and co-regulation between industry and government. Management of organisations currently constrained by inconsistent legislation and regulations in multiple jurisdictions therefore needs to determine which response has the greatest potential to satisfy the twin goals of, on the one hand, achieving better corporate responsibility and, on the other, ensuring that jurisdictional barriers that currently militate against a single and truly barrier-free Australian market are removed in order to promote enhanced transparency, greater competition, and increased investment.

Of course, the two approaches outlined above need not be mutually exclusive. They may be used sequentially, if not in tandem. Indeed, the most potentially optimal scenario would be for industry to initiate the regulatory reform process by developing guides best-practice environmental management that overcome regulatory inconsistency among various jurisdictions. This done, these principles of leading practice can form the basis of overarching national regulation carried out by means of the first approach discussed in this paper, with the guides to leading practice forming a convenient normative benchmark for subsequent governmental regulatory reform. Here, the challenge is to ensure that regulatory agencies, as crucial stakeholders, endorse industry-led reform before it is implemented, not only because this has the potential to generate greater overall industry commitment than might otherwise be the case, but also because it commits the regulators to being part of an industry-led regulatory reform that is pleasing to all stakeholders, in as much as this is possible.

Further research and testing of incentive-compatible pricing as an alternative mechanism for achieving the goals of environmental regulation is also recommended. Properly designed, it has the potential to encourage organisations to disclose their cost structures associated with internalising environmental externalities, hence overcoming the information asymmetry problem of conventional regulation.

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