Bringing the 'R' Word Back: Regulation, environment protection and NRM

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Foreword

Environmental regulation has had a chequered path since the birth of the US Environmental Protection Agency in 1970, the enactment of the Victorian Environment Protection Act in the same year, and the launch of the first European environmental policy in 1972. Today, over two decades of neo-liberalism has ensured that regulation is no longer centre stage and that markets, voluntarism, and other 'light handed' policy initiatives play a greater role in curbing environmental degradation.

Whether the failings of free markets and 'soft' policy instruments exposed by the financial crisis will result in a broader rethinking about the appropriate roles of markets, regulation and governance remains to be seen. Will we, for example, see a new era of 'social capitalism' involving substantial government intervention and regulation, as Prime Minister Rudd has advocated?

This ASSA roundtable focused on two important areas of environment protection: the 'brown' issue of pollution control; and the 'green' issue of natural resource management (NRM). It brought together policy practitioners, academic social scientists and others directly involved in the regulatory process and asked, amongst other questions:

- Is regulation simply one instrument amongst others in the environmental regulator's toolkit or should it play a more central role than it has in recent years?

- What sorts of instruments and policy mixes are likely to work best in terms of effectiveness, efficiency, equity and political acceptability?

- To what extent should the state steer rather than row, and harness the capacities of second and third parties rather than regulating directly?

- What is the role of new collaborative forms of governance facilitating local communities and other stakeholders to engage in 'on the ground' decision-making subject to central government oversight?

- Are the changes introduced by the present Federal Government, with regard to collaborative NRM, having a positive or negative impact?

The roundtable particularly examined the roles of environmental policy, regulation and governance. It sought a better understanding of what has worked and why, and to identify which particular architectures and policy mixes are most suited to deal with particular types of environmental problems.

The basic arguments explored in the roundtable are set out in this paper by the authors (which draws on a much longer and more fully referenced article by Neil Gunningham to which readers are referred[1]). The selected comments of participants are provided at the end of each section. This format preserves coherence of argument and approach, while ensuring that the invaluable contribution of each participant is fully represented.

As is customary with ASSA events, the roundtable was conducted in accordance with Chatham House rules and so individual contributions are not attributed.

Nevertheless it was the rich diversity of insights and wisdom brought to the event by each participant that made it both distinctive and worthwhile. The participants are listed on page 25. We thank them all and the anonymous reviewers of this paper.

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The global financial crisis prompted Robert Skidelsky to reflect that societies 'swing like pendulums between alternating phases of vigour and decay; progress and reaction; licentiousness and puritanism. Each outward movement produces a crisis of excess which leads to a reaction. The equilibrium position is hard to achieve and always unstable'[2].

More concretely, the crisis caused much soul searching about the relative merits of markets and regulation and prompted Prime Minister Rudd to suggest that it has kick-started a new cycle of history. He argued that post war history has been characterised by two phases. The first, from the 1940s to the 70s, relied upon a Keynesian economic model and involved substantial state intervention across a diversity of social fields. The second, from 1978 to 2008 – the neo-liberal ascendancy – involved a return to markets. But now, in the wake of the GFC, a new regime is being shaped, involving 'social capitalism', 'social-democratic capitalism', or 'social democracy' and under which 'a system of open markets [will be] unambiguously regulated by an activist state, and one in which the state intervenes to reduce the greater inequalities that competitive markets will inevitably generate'[3].

Applied to environmental protection and natural resource management, is Rudd correct?

In considering this question, the three main 'actors' – the state, civil society and business – and their contributions to environmental law, regulation and governance, are first examined in isolation. Later sections will necessarily explore the interactions between them. This enables the development of a more sophisticated and nuanced account of how and why environmental architectures have shifted in particular directions and the consequences of those shifts.

1. Roles of the state

In broad terms, the history of environmental regulation – as with economic and social policy more broadly – can be characterised in two phases: (i) state interventionist/regulatory and (ii) neo-liberal.

The first phase began with environmental legislation in Anglo-Saxon countries in the 1970s. The dominant approach was to promulgate legislation designed to prohibit or restrict environmentally harmful activities, (particularly pollution) by using 'direct' or 'command and control' mechanisms. The preferred technique was to identify an environmental target such as a limit on emissions of a pollutant to water or the air (the 'command'), with penalties that would be imposed if this target was not met (the 'control').

This architecture, at least in the way it dealt with point-source pollution from large business enterprises, achieved some significant victories in halting, or at least slowing, some forms of environmental degradation. In imposing technology-based standards on large industries, direct regulation sometimes achieved quite dramatic improvements in environmental performance. Nevertheless, by the 1980s direct/ 'command and control' regulation was widely criticised for being inflexible and excessively costly for business[4].

This critique of direct regulation can be seriously overstated. But the fundamental concern – that direct regulation, whatever its effectiveness, scores poorly in terms of

efficiency – was becoming increasingly pertinent as regulators sought to expand their reach. As they did so, it became apparent that the relative strengths and weaknesses of direct regulation vary substantially with the context. In broad terms, the more complex the environmental problem, the more obvious become the limitations (and the inefficiencies) of direct regulation in addressing it. For example, it is one thing to regulate point-source pollution caused by large, homogeneous industrial facilities, but it is quite another to apply the same approach to pollution caused by heterogeneous enterprises. Equally, direct regulation is a crude and often inappropriate tool for engaging with such complex problems as diffuse source pollution from agriculture, or biodiversity loss on private land, or natural resource management generally.

In any event, direct regulation was falling into disfavour as a consequence of broader shifts in the political and ideological landscape. By the 1980s there had been, particularly in the USA and the UK, a considerable turn towards neo-liberalism – essentially the enterprise of embedding market values and structures within economic *and* social and political life. Assisted by the economic and political collapse of the former Soviet Union, neo-liberalism triumphed almost unchallenged and environmental policy received a sharp injection of free-market ideology. Although public opposition precluded the sort of wholesale deregulation that occurred in some other policy areas, environmental regulatory budgets were substantially cut in almost all jurisdictions. As Richard Lazarus, writing of the USA, points out: '…limited budgets, appropriation riders, interpretive agency rulings, massive delays in rulemaking, and simple nonenforcement are more than capable of converting a seemingly uncompromising legal mandate into nothing more than a symbolic aspirational statement'[5].

During the same period, governments also experienced considerable pressure from industry to reduce the economic burden of complying with environmental regulation. Although on most calculations the costs of compliance are relatively modest[6], the confluence of economic pressures and political ideology sometimes constrained the introduction of further direct regulation (though many earlier forms of direct regulation remained on the statute book).

Nevertheless, since environmental problems appeared to be increasing rather than going away, and since the public still appeared to value environment protection, the question for neo-liberal politicians became: what was to replace direct regulation (or rather, operate along side it, though the question was rarely put in these terms)? This question was the focus of policy makers from the early 1980s onwards. Antagonistic to direct government intervention but largely unable to deregulate, policy makers during this era sought to devise a range of less intrusive regulatory interventions, which were rolled out during the late 1980s and early 1990s.

One important change was the shift towards economic instruments, which, by 'mimicking the market', were perceived to be far more efficient than command and control regulation, and capable of providing industry with the flexibility and autonomy to make least cost decisions. Thus there was an increasing focus on the use of price signals in the shape of taxes or charges, property rights in the form of tradeable permits, and supply side instruments in terms of subsidies.

Two areas where this shift was particularly evident, both in Australia and overseas, was the management of freshwater and fisheries resources. The Australian Government, for example, developed various fisheries regulations focused on both 'effort' controls and 'output' controls during the early 1990s, including regulating access to tradeable property rights through individual transferable fish catch quotas[7]. Similarly, during the 1980s and 1990s, tradeable water rights regimes developed in Australian states such as South Australia, New South Wales and Victoria were followed by The

Council of Australian Governments' National Competition Policy Package, which required that some form of water market be developed in every Australian state[8].

Yet, despite the criticisms of command and control in the point source pollution arena, regulated businesses consistently opposed the introduction of economic initiatives such as taxes and charges, preferring the certainty of regulation to the uncertainty of novel approaches. To accept even a modest tax, they feared, would be the 'thin end of the wedge' because over time politicians would succumb to the temptation to ratchet such taxes upwards, even where this could not be justified in environmental policy terms. There were also concerns about competitiveness arising from the imposition of unilateral taxes, eg, the proposed EU carbon tax, which failed for this reason, amongst others.

Another alternative to direct regulation, and more popular with business, were a variety of voluntary initiatives which were commonly applied during this period. Such approaches included self-regulation, voluntary codes, environmental charters, co-regulation, covenants and negotiated environmental agreements. Unfortunately, by the late 1990s, a number of systematic reviews of the various voluntary initiatives had concluded either that there were few demonstrated benefits, or that those benefits were confined to 'soft' issues – such as information diffusion and consciousness-raising[9].

By the mid to late 1990s, there was a return to a greater emphasis on regulation. However, neo-liberalism still held sway (albeit in a gentler form) and 'new regulation' proved to be very different from 'old regulation' and especially from the command and control regulation that characterised the 1970s. In most Anglo-Saxon jurisdictions, governments began experimenting with an innovative approach to standard setting variously termed 'process-based', 'systems-based' or 'management-based' regulation. This involved firms developing their own process and management system standards, and developing internal planning and management practices designed to achieve regulatory goals. Such standards have the considerable attractions of providing flexibility to enterprises, but, in the absence of more coercive intervention by the state, their impact has (for the most part) been very modest. Regulatory flexibility initiatives seemed to 'operate more or less at the margins of the existing regulatory system, tinkering with incremental changes'[10].

Roles of the state: participants' views

The roundtable discussed the role of the state in regulating pollution and the purported shifts from regulation to markets and voluntarism. Discussing the various strengths and weaknesses of these roles, many suggested that regulation had remained a central pillar and that the key is selecting the right instrument or mix of instruments for the right problem. While it is impossible to do justice to the various nuanced arguments and examples discussed, some of the positions taken by individual participants are summarised below:

- I think regulation has been tremendously successful with the big end of town. That is, I think it works best where you've got a limited number of players and the effects of what they do are more obvious, because you can always monitor the output of fixed source emissions from chimneys, but where… it's not so obvious what they're doing, then regulation [is] harder and harder to [make] effective.

- We agree that whilst market mechanisms have been widely promoted, in fact they've been rather rarely practised and there's still relatively little experience.

- In New South Wales… we've got the green offset pilot…then there's the Hunter River trading scheme, which is the only trading scheme…it can do a lot of good if the regulator just keeps an eye on what's happening.
- I think regulations always underpin all the other things, it might be cute, like your market-based instruments and incentives but regulation always underpins it.
- Looking at volunteerism, if we were trying to test it by results it hasn't worked. It's not that those initiatives on the warm fuzzy end have no value, but [that] they're going to have value where they're underpinned by something dirty called regulations.
- Victoria's a good example of that… it's a variation on regulation because it's voluntary or semi-voluntary because we're breathing down your neck.
- I sometimes wonder whether it's a little bit of a fruitless debate to be talking about [whether there is] a shift between regulation and market instruments. It may be different when you talk about regulation or voluntarism but there's a better debate to be had [and that's] what's the actual optimum mix of tools and matching the tools to problems?
- Governments have always had basically three tools in the toolbox, the regulation, instruments that affect incentives and the educational. The question for them has been to propose changes over time and the important thing is not to say that a or b or c is best and always perfect, but it's about getting the right mix of incentives and getting all three of them working in the same direction rather than at cross purposes.

2. Roles of business

For many years business's approach to environmental issues was an essentially reactive one. They regarded such legislation as unnecessary, the problems it was intended to address as of little significance, and the costs of compliance as unconscionable. Even those who came to regard it as a necessary evil were hardly enthusiastic participants in the regulatory enterprise.

But, over the last 15 years or so, a transformation has taken place in the attitude of *some* parts of business. Today, an increasing number of corporations are seeking to combine the objectives of environmental protection and economic growth, whether by preventing pollution and thereby cutting costs and avoiding waste directly, by more effective risk management (including minimising the risk of accidents, costly cleanups, and environmental liability) or by gaining an increasing share of expanding 'green markets'. Thus a common refrain is that going beyond compliance is both good for business and good for the environment.

Those who view the environment in these terms do not have a problem with environmental regulation, but they do have problems with *forms* of regulation that impose unnecessary costs upon them and that constrain their environmental initiatives. And they are particularly dissatisfied with the cost and inflexibility of command and control regulation, and for these reasons have sought less confrontational alternatives. The Yorktown experiment in the United States, where the Amoco refinery found that it was able to achieve the same level of emissions reduction as required by regulation at a quarter of the cost, if it was 'freed up' from the regulatory requirements, is salutary[11].

Nevertheless, the empirical evidence that is available suggests that certain firms and certain sectors are much more likely to go beyond compliance than others. It has been

suggested that the extent to which business goes beyond compliance may be related to its 'licence to operate'[12]. This licence includes economic and social demands as well as the demands of government regulators: what they termed the economic, social and regulatory licences respectively. Large, reputation-sensitive companies that are regularly scrutinised by environmental groups and local communities will be particularly driven to go beyond compliance to protect their 'social licence'. Other firms or industries, which are not subjected to such external pressures (including most small and medium sized business), are far less likely to do so.

This analysis has important normative implications. For example, procedural empowerment through law (the regulatory licence) was found to be a particularly potent means of expanding the terms of the social licence and thereby the scope of corporate environmental initiatives, as was the use of the regulatory licence to expand the social licence through requirements to disclose comparative information (such as by the Toxic Release Inventory described below). Moreover, as Christmann and Taylor[13] argue, to the extent that there is a business case for corporate environmental responsibility, then it may be appropriate for public policy itself to shift from a corporate accountability model (as through environmental regulation) to a corporate responsibility model.

Roles of business: participants' views

The roundtable broadly agreed with the above analysis of business's role in environmental regulation. While some warned of the continuing dangers of traditional regulation imposing unnecessary costs upon business, others examined the emergence of regulatory initiatives premised on a desire to tap into the enlightened self-interest of business in regulating itself. Extracts from the discussion follow:

- Regulators don't have the answers to the big challenges, so they're going to have to partner with business to work out how to solve these things because if they don't we're just going to keep making incremental change that isn't going to help.

- I think we can see in that large polluter context some interesting trends that attempt to try and reward good behaviour by way of lessening requirements with respect to reporting, monitoring, compliance, licence conditions etc.

- We're doing a regulatory scheme called Energy Resource Efficiency Plans which asked companies over certain thresholds to look at their energy award threshold – to do a full environmental assessment of energy, water and waste. [It] was actually under a three-year payback which was meant to be looking at the business value of doing these things and it would save money down the track… We have also done a lot of voluntary action, we've done a lot around covenants and other MOUs and other agreements. Sometimes they've worked well, sometimes they haven't and so what we're trying to do now is find out where the balance is.

- Another example is Corporate Licence, we take any company that has more than one site, we can divide them into a single licence…we also, through that process, talk to the company about their opportunities, where they think their business case is for doing more than they have to… We think it is important to do that and we attach that to the licence framework and, while we can't take you to court for not doing something, there are public documents, there's a lot of hoo-ha about when they're launched, so there is that element, that we can make sure we are getting that company to look at cost saving.

- What I see as one of the most interesting evolutions now is offsets… It's a way of allowing the regulated community to organise their own affairs to the best advantage. A win-win solution – if you have an expenditure of money on the

problem where is it best made? You don't have to regulate over-expenditure in one area for a very small percentage gain when you can allow the regulated communities to determine the distribution of money for a much greater gain somewhere else.

- If you go to the EPA website in NSW you find the green offset program…there's been a lot of talk about it and over the years you know you'd expect to see a lot more, but there's still only the pilot program …it's all dependant on regulation but it does give some flexibility with the regulator keeping an eye on it for the regulated community to do their own thing within their own budgets and produce hopefully better outcomes than by more direct regulation.

- There's still a regulatory phase [but] there's been a shift. In the past we might have said 'well you're not allowed to emit X amount of something', now we're still saying [that] but you can be free to find your own way to do that.

3. Roles of civil society

While government regulators have been losing both their power and resources, others, including communities and NGOs have begun to fill the regulatory space they previously occupied.

Community-based environmental protection has gained increasing attention as either a complement to or a substitute for traditional direct regulation. Environmental NGOs, in particular, have become increasingly sophisticated at communicating their message (via global television, international newspapers and the internet) and in using the media (and sometimes the courts) to amplify the impact of their campaigns. They have not only sought to shape public opinion, to lobby governments and to pressure them to enact and enforce tougher environmental laws and regulations, but also to influence consumers and markets through strategies such as orchestrating consumer boycotts or preferences for green products.

Some NGOs have redirected their attention towards corporations through strategies ranging from confrontation and direct action to partnership and co-operation. In terms of the former, perhaps the definitive incident was the confrontation between Shell and Greenpeace UK concerning the proposed dismantling and disposal at sea of a disused oilrig, the Brent Spar. A widespread boycott of Shell service stations in Northern Europe ultimately convinced Shell to abandoned its disposal plans. The incident had a searing effect, not just on Shell itself, but also on other major reputation-sensitive companies which realised, perhaps for the first time, the economic and social damage that could be unleashed upon them by NGOs.

In terms of co-operative strategies, environmental partnerships came of age in the 1990s when parts of industry and NGOs recognised that conflict and confrontation could hamper both economic and environmental results. For example, through 'green alliances' business may obtain the political goodwill and credibility which NGOs bring to the partnership, while in return, environmental groups gain commitments to improved environmental practices on the part of their business partner.

Over time, the diverse actions of NGOs and communities to protect the environment became seen as a form of surrogate or indirect regulation, sometimes termed 'civil regulation'. As defined by Murphy and Bendall: 'civil regulation is where organisations of civil society such as NGOs, set the standards for business behaviour. Enterprises then choose to adopt or not to adopt those standards'[14]. The goal of civil regulation is to fill the vacuum left by the retreating state and to compensate for 'the deficit of democratic governance that we face as a result of economic globalization'[15].

Under civil regulation, the various manifestations of civil society act in a variety of ways to influence corporations, consumers and markets, often bypassing the state and rejecting political lobbying in favour of what they believe to be far more effective strategies. Sometimes NGOs take direct action, usually targeted at large reputation-sensitive companies through boycotts, as in the Brent Spar example, or the effective boycott of Norwegian fish products organised by Greenpeace in protest against that nation's resumption of whaling. Less successful are campaigns that seek to provide a market premium for 'environmentally preferred' produce, due largely to the unwillingness of consumers to support such a strategy. However, certification programmes such as the Forest Stewardship Council are 'transforming traditional power relationships in the global arena. Linking together diverse and often antagonistic actors from the local, national and international levels … to govern firm behavior in a global space that has eluded the control of states and international organizations'[16].

However, the evolving role of civil regulation has not been entirely divorced from state intervention. On the contrary, either in response to pressure from the institutions of civil society or in recognition of the limits of state regulation, governments are gradually providing greater roles for communities, environmental NGOs and the public more generally. Thus a number of 'next generation' policy instruments are geared to empower various institutions of civil society to play a more effective role in shaping business behaviour. In effect, they facilitate civil regulation.

Chief amongst these initiatives is 'information based regulation' which has been defined as 'regulation which provides to affected stakeholders information on the operations of regulated entities, usually with the expectation that such stakeholders will then exert pressure on those entities to comply with regulations in a manner which serves the interests of stakeholders'. This is epitomised by Community Right to Know (CRTK) legislation, the most powerful manifestation of which is the US Toxic Release Inventory (a response to the Bhopal chemical disaster of 1984)[17]. Several other jurisdictions have followed the TRI lead, the Global Reporting Initiative being the most recent and arguably most important international initiative of this type[18].

Roles of civil society: participants' views

The round table reflected on the role of the 'community' in our systems and structures of regulation, including training people to become authorised enforcement officers in South Australia and Victoria. In particular, the roundtable examined the role of the 'community' as a regulator and the challenges it faces in accessing information and obtaining standing. The following summarises some of the key issues raised:

- If you're going to have these more flexible pools of regulations that give certain allowances to business on the understanding that there are performance measures being met, the question again becomes: where does the community get to decide who will participate and consent to these things and to what extent is it consent or simply an information disclosure process?

- I had the experience recently in South Australia of trying to bring proceedings in the environment court on behalf of residents who were suffering a very difficult situation with red dust pollution. It was extremely difficult to meet any of those procedural criteria and the EPA were sitting on the sidelines watching while the community was forced to bring action in order to try to get some compliance and response.

- I think that the community input is significantly undervalued and under developed in Australia.

- The Carbon Pollution Reduction Scheme too...there are no transparency mechanisms in that legislation at all, absolutely none, they don't have third party review, there's no way of giving a third party access, yet the reporting is [supposed] to be transparent. So the question of third party access and third party enforcement is clearly on the agenda and that goes to so-called regulation or whether it's a market mechanism. But the thing about market mechanisms is you can lose transparency…you put it in a contractual mechanism and you whack in confidentiality and all your commercial-in-confidence which can be used to hide information.

4. State, business and civil society: bringing it all together

By the 1990s, regulatory agencies were becoming acutely aware of their limited knowledge, capacities and resources to regulate directly, particularly with regard to increasingly complex environmental problems. In this context it is important to point out that it was not just politically conservative administrations such as those of George W Bush in the USA, Stephen Harper in Canada or John Howard in Australia, that opposed tougher regulation, but also the Blair Government in the UK and a range of state and provincial centre-left governments in Australia and Canada. In the UK, for example, the influential Hampton Review in 2005 was entitled: 'Reducing Administrative Burdens', while the Better Regulation Task Force Report in the same year was entitled: 'Regulation – Less is More: Reducing Burdens, Improving Outcomes'.

In such a political environment, environmental regulators have had to explore alternatives to traditional regulation that would meet with the approval of governments and their constituencies. Increasingly, regulators talked of 'regulating at a distance', 'light handed regulation' and 'steering not rowing' in policy design. This last approach was particularly attractive in an era of diminishing resources where the regulatory space once occupied almost exclusively by the state was now being filled by NGOs, business self regulation and by a variety of third parties who might conceivably act as surrogate regulators.

In this new political environment, there were a number of attempts to design more business-friendly and less demanding alternatives to traditional regulation, but without leaving business with an entirely free rein. Some of these have already been mentioned, but two other initiatives – regulatory pluralism and the new environmental governance – merit more detailed treatment because they recognise the extent to which it is no longer practicable, or even desirable, for government regulators to 'go it alone', and because they recognise and harness the reality that business and civil society cannot be treated as bit players or (in the case of business) passive recipients of government regulation.

Regulatory pluralism or 'Smart Regulation'[19] is a concept that resonated with what practitioners were seeking or in some cases already designing (but in the absence of a broader theoretical framework). The central normative argument of Smart Regulation is that, in the majority of circumstances, the use of multiple rather than single policy instruments, and a plurality of regulatory actors can and should be used to produce better regulation than single instrument or single party approaches (including through informal social control). This will allow the implementation of complementary combinations of instruments and participants tailored to meet the imperatives of specific environmental issues, and will result in a more flexible, efficient and effective approach to environmental regulation than has so far been adopted in most circumstances. Smart Regulation suggests that behaviour can be shaped by a diversity

of unconventional but (in a broad sense) regulatory mechanisms such as the influence of: international standards; trading partners and the supply chain; commercial institutions and financial markets; peer pressure and self-regulation through industry associations; internal environmental management systems and culture; and civil society in a myriad of different forms.

A substantial number of policy instruments of the last decade are consistent with the precepts of Smart Regulation, including, most recently, the European Community Regulation on the safe use of chemicals, and the Registration, Evaluation, Authorisation and Restriction of Chemical substances (REACH)[20].

This approach can be seen as part of the broader transition in the role of governments internationally: from 'rowing the boat to steering it' or choosing to 'regulate at a distance' by acting as facilitators of self-and co-regulation rather than regulating directly. Thus environmental policy-making involves government harnessing the capacities of markets, civil society and other institutions to accomplish its policy goals more effectively, with greater social acceptance and at less cost to the state. However, since parties and instruments interact with each other and with state regulation in a variety of ways, careful regulatory design will be necessary to ensure that pluralistic policy instruments are mutually reinforcing, rather than being duplicative, or worse, conflicting.

5. New environmental governance – is NRM different?

While the above analysis is readily applicable in such areas as pollution control, it is arguably far less apposite to the management of land and water resources. Agriculture has always argued that it is 'different' and that conventional regulatory techniques cannot appropriately (or effectively) be brought to bear on agricultural producers. In any event, in Australia, as elsewhere, political power and geographical isolation have ensured that agriculture has rarely been subjected to anything remotely approaching the same degree of regulatory intervention as large manufacturing.

Subsidies, outreach programs and broader educational and voluntary initiatives, have been more favoured instruments to address the various environmental challenges that agriculture faces. However, this is to some degree changing, particularly in such areas as water and fisheries management, where economic instruments are playing an increasingly important role (see above). The issue of biodiversity has also seen increasing experimentation with both the regulation of vegetation[21] and market and neo-market instruments, including tender and auction systems and biodiversity offsets[22]. Nevertheless it is arguable that agriculture, and the government's approach to its regulation, remains distinctive.

One particularly distinctive approach to NRM is what has been referred to as 'new environmental governance'[23]. This enterprise involves collaboration between a diversity of private, public and non-government stakeholders who, acting together towards commonly agreed (or mutually negotiated) goals, hope to achieve far more collectively than individually. In broad terms, it relies heavily upon participatory dialogue and deliberation, devolved decision-making, flexibility rather than uniformity, inclusiveness, transparency and institutionalised consensus-building practices[24].

During the late 1980s and 90s in Australia, embryonic, but pioneering forms of this new environmental governance included state-based integrated catchment management, which emphasised public and community partnerships, geographical integration and the development and implementation of catchment plans[25]. Equally significant was the National Landcare Program, which commenced in 1989. This initiative involved government funding ($360 million) for education and demonstration activities designed

to engage a significant proportion of the rural population to create more sustainable practices, instill stewardship ethics and produce more informed and skilled land managers[26]. In 1996-1997, the National Landcare Program expanded its focus to on-ground work on private land where there were conservation benefits. It did so through increased program funding obtained under a new Howard government initiative known as the Natural Heritage Trust[27].

This program was based on a $1.25 billion reserve from the partial sale of the national communications carrier (Telstra) and focused primarily on funding on-ground conservation works to address water, seas, coasts, biodiversity and sustainable agriculture[28]. But, following reviews of the program at the end of the 1990s, which pointed to substantial shortcomings such as piecemeal investment and a failure to target priority problems, the Federal government developed a more 'strategic' and regionally focused approach to resource management under the so-called Natural Heritage Trust 2 and National Action Plan for Salinity and Water Quality[29]. While these initiatives were broadly consistent with wider trends towards regionalism and decentralisation of NRM around the globe[30], they marked a significant shift from the earlier NRM programs, including the first phase of the Natural Heritage Trust[31]. The main features of this shift to regional NRM are described in general terms below.

Regional natural resource management in Australia

Under the Howard government, much NRM decision-making power was devolved to the regional level. Fifty-six regional NRM bodies were created across Australia. These bodies generally comprise a mix of community, rural and other stakeholders; have formal office holders; and responsibility for undertaking NRM consultation, planning and priority setting. They must each develop a regional plan and regional investment strategy and implement these under a collaborative partnership-based decision-making process.

This collaborative regional approach involves a style of governance that seeks wide-ranging 'partnerships' between landholders (including Indigenous Australians), regional communities, industry, local, State and Territory and Commonwealth governments, and the wider community in which power (in terms of priority setting and how to achieve those priorities, and programme delivery) is exercised through multi-stakeholder participation in decision making, coupled with monitoring, evaluation and oversight by the regional bodies, by State–Commonwealth Steering Committees, the NRM Ministerial Council, and (through the relevant Ministers) the State and Federal Governments. There is an emphasis on 'joined-up' institutional arrangements, networks and knowledge exchange. Crucially, the Federal Government, which is providing the money without which these initiatives could not operate, maintains tight control over the purse strings, and regional bodies are well aware that should they depart substantially from the parameters laid down by the Commonwealth, they risk losing their funding, dissolution, and replacement by a new entity.

Central to the architecture of the Howard Government's regional NRM initiatives was recognition that different regions/ecosystems raise very different environmental challenges; that NRM in each of these regions involves multiple stakeholders; and that the resources, capacities and institutions necessary to address the NRM challenges can themselves vary significantly. Accordingly, provision is made to enable each region to develop their own mechanisms for addressing NRM challenges within parameters set nationally, thereby combining 'the advantages of decentralised local experimentation with those of centralised coordination'.

The Howard initiatives are now being replaced under the present government by a new natural resource management initiative, Caring for our Country. This new program is 'an integrated package with one clear goal, a business approach to investment, clearly articulated outcomes and priorities and improved accountability'[32]. Although Holley's[33] research suggests such program transitions at the federal level have weakened stakeholder commitment and the stability of regional NRM, the new Caring for Our Country initiative seeks to improve on the Federal Government's previous natural resource management approach by integrating the delivery of older programs, including the Natural Heritage Trust, the National Landcare Program, the Environmental Stewardship Program and the Working on Country Indigenous land and sea ranger program. Since this initiative is still in its early stages it has not yet been subject to detailed evaluation.

Evaluation of the similar new governance initiatives being rolled out in the EU under the Open Method of Coordination (OMC) is somewhat more advanced. Critics are building up an increasing 'head of steam' on the basis of preliminary evidence. Some suggest for example, that the OMC has failed as a means of pursuing common policies at EU level, while others argue that the OMC has only limited direct effects in the short term and indirect effects in the medium to long term. In terms of 'a new democratisation', it is said that 'only big corporations, well-organised interest groups, trade-unions, non-government organisations (NGOs) and some journalists and scholars show an active interest in the decision-making process'[34]. The result may be that 'under the guise of consultation, regulatory powers are virtually delegated to private actors'[35]. And these private actors, in any event, may themselves be vulnerable to co-option. Whether the same will be true of Australian NRM remains to be seen.

Certainly regional NRM is much more pluralistic and deliberative than previous forms of NRM governance, but, given the extent to which regional bodies lack autonomy and ultimately power, one might argue that they are primarily a means of incorporating a broader range of stakeholders into the existing political establishment without threatening the status quo, which can be maintained through the Commonwealth Government's control of financial resources. It may even be that rather than identifying, mobilising and co-ordinating local, diverse and dispersed knowledge and capacities, the regional bodies (or at least some of them) will simply become delivery vehicles for government initiatives. Further, if participation is premised on an increasing level of accountability to central governments, then regional bodies may evolve into bureaucracies, undermining their original purpose and their adaptive capacities[36].

NRM and the role of regulation: participants' views

The roundtable raised a number of issues relating to NRM, 'existing uses' and the need for active management on private land, not simply prohibition:

- When we're looking at green issues, [we've] really got to have this time dimension. Some of the problems are a result of past activity in which government has been heavily involved, for example, pastoral leases where landholders were required to clear, and there are current ongoing practices, people talking about planning about existing uses and there are similar provisions in other legislation. Generally we feel that we shouldn't regulate existing uses heavily, that it's a vested right if you like.

- If we look at biodiversity conservation specifically, how do we modify existing harmful practices? Well we can use command regulation and we can use incentives and I think that's what we mean when we talk about catchment management. Catchment management is generally about ongoing management of

existing uses and using incentives rather than regulation. Whereas when we talk about securing land for development, we're reasonably comfortable with using land regulation, although in practice people get approvals and they're subject to government conditions, but they are put through a regulatory system.

- Biodiversity conservation is not just about setting land aside, it's procuring active management as well. I think we're going to be loath to ask people to manage land for biodiversity conservation and back that up with sanctions in a command context.

- If we decide that you the landholder must manage your property in a certain way at your own expense for our outcomes – and we have tried in the past to do that through land control regulation – what that sets up is a whole lot of perverse incentives. What frequently happens in those cases [is] what the Americans call the shoot, shovel and shut up syndrome… What annoys me in those contexts is the very things that we've identified as being of extremely high value to society are going to be destroyed because we try to impose a coercive regulation which clashes violently with the self interest and incentive of the owner… so you're almost certainly going to have to start paying – [providing] incentives.

- Then there's the question of who should pay. We have seen stewardship payment schemes where government is paying landholders to manage land for biodiversity conservation purposes, not simply to clear up historical land degradation.

- Maybe you can have some sort of tax or an element of the rating system whereby you pay for the environmental services that are provided…there are also issues about offsets. Also conservation NGO's applying of significant areas of land and creation of 'private' national parks if you like.

- And then there's this bio-banking, which is really quite interesting in New South Wales. The basic idea is that developers have to offset. In other words, if they destroy biodiversity they've got to essentially replace it, and there's issues about whether or not it is like for like. So that's the offset system.

- If you look at the services that viable farming land provides to the ecosystem in terms of corridors for wildlife, water quality, maintaining soil fertility and a whole range of other things… there is the sense in which those landholders are the custodians of the land for more than just their own personal gain. In the context of carbon I'm now beginning to see this differentiation between the ownership of the vegetation and the ownership of carbon and the vegetation. So that those who own carbon in trees, in soil, may be able to generate a payment for maintaining that carbon and reducing, offsetting in a sense, the overall volume… We say that property no longer gives you an unrestricted right to do things, but maybe the other side of that equation is that where people are maintaining ecosystems there ought to be some recognition and even some financial entitlement for wise management. And so it's an interesting combination of the market mechanism and the incentive.

- If we identify anything out of this particular dialogue in the way of an outcome, I think this is one area where a combination of lawyers and economists and scientists could do a lot more.

NRM and new environmental governance: participants' views

The roundtable also touched on the emergence of 'new environmental governance' approaches in natural resource management, raising a number of concerns about the way the regional natural resource management program in Australia is playing out:

- If you go back to the national soil conservation program, the governments went out and did it. We did all the land conservation measures and we imposed them on

landholders and when we came back… had the landholders still maintained them? No. We tried Landcare and we said 'okay, that's your problem, you fix it, we'll give you some incentives', and it was argued that that didn't work and I think that decision was taken a couple of years too early. We were just starting to see quite a significant change in South Australia in terms of what was happening across the community, they were just starting to come together and recognise that they needed, community groups needed, to work together …and now we're into NRM and we're talking about that and we're into a new model again. The problem is there's never been a consistent [Commonwealth government] policy position for any length of time to enable anything to bed down and give us some results.

- The government set up the regional CMAs and I don't know what they'll try next, but I doubt they'll survive for another two years because I think in many cases they were set up to fail… But if you're going to have regional NRM there needs to be political will and if there's not then they ought to just say so and stop mucking people around.

- It's the process, 55 reports a year, this sort of stuff – it just about killed us going through all the work to get the submissions in for competitive grants.

- My observation in South Australia is that when we moved to this so-called integrated NRM model, one of the first things it did was to take the state government off the hook in terms of its budget.

- Certainly in South Australia the NRM boards have been asked to fund themselves… to me it was a significant transfer of responsibility financially and I don't think the government would have been at all upset about it.

- There are a lot of problems in New South Wales and just how it's generated… Land conservation [was] wiped, land, water and space was wiped out, infrastructure planning, natural resources, they didn't talk to EPA or others… then you know, we've had five Ministers and now we've got 13 super ministries and 55 portfolios in New South Wales. So the people have changed.

- The Wentworth Group has put out a report…and I find it astonishing that collectively governments have been spending about $9 billion a year on environmental management and they had no idea what the baseline conditions were. We had no mechanism to evaluate, at the end of the five-year program, whether the environment in the particular region was better or worse as a result.

- And you have no idea what the target is we're working towards.

- Yes well, you seemed to know what you wanted to achieve but you don't know where you started and you don't know where you finished.

Property rights, planning and development controls and NRM: participants' views

The roundtable also raised a number of important issues that were not considered in the above analysis, including the issues of property rights and planning and development controls. These are summarised below:

- I think that underlying much of the debate around the natural resources issue is the concept of property rights and visions of what that is, and it does spill over into water and the critical decisions that were made under the national competition policy and the national water policy about creating property rights. So I don't think you can have a discussion in this area about regulation and economics without including the subject of property rights somewhere.

- Just on that, the acceptability of regulation at all, the degree of regulation and the types of regulation all come back to people's perception of property rights. If we

concede it to be a public resource for example, whether it's because of the Roman concept of public trusts or not, I think most people will have a greater degree of acceptance that there can be regulation of that.

- Then of course we have the disjunct between people's perception and the reality. I mean how many people will still say, you know 'a man's home is his castle – they can do what they want'. Well that's not been the law for so many years, but it still goes around and you've still got farmers walking around saying that.

- I think that one of the worrying trends is the use of property in a lot of resource market-based instruments. It doesn't need to [be] in there, I think it complicates things and it also directly raises and re-raises the question of the expectation of compensation. I think it's a dangerous trend and I think that it ties the hands of government, the regulator, in a way that potentially will limit the capacity for adjusting management.

- But as soon as you allow trading, then whether you're calling to property rights or not, people will regard it as their property.

- But I think legally you don't need to do it… For example, the Murrumbidgee irrigators have got the idea of water share into the High Court and to whether a reduction is a regulatory taking or not and so I think it's very dangerous to actually introduce property nomenclature.

- But it's too late, we've done it.

- I see that there's going to be a change in the way we perceive what is privately owned and what is publicly owned and what is the bundle of rights that we have in what is privately owned. For example, no-one would think that you need to be compensated if you bought land and found out that it had acid sulfate soils that you can't develop or that it is prone to land slip or that it's going to be flooded and under a new climate change induced sea level rise in 20 years. No-one's going to rush back to government and say 'gee if I'd known that. I want some compensation'. Yet if you find that you have a burrowing Bettong, suddenly, you've got to be compensated for it. Why? It's an attribute of the land in the same way that the others are attributes. Will there be a change in the way we see what [constitutes] the bundle of rights?

- The nature of the way we see those rights will change and again [let's look at] water and carbon. The national water initiative has provisions for making changes to allocations based on new knowledge of climate change and degradation of water systems. So we've got the situation where [even] if you wanted to give back all the entitlements to the irrigators there is no water left in the river, or perhaps no-one would have access to it. I think the climate variability will impact on the value of property rights that were assigned under a different climatic circumstance.

- The big thing that has been omitted is planning and development control and one cannot understand what's gone on without looking at that. Let's take a factory, the fundamental first point is, where are we going to put the factory? The very point of zoning is about trying to separate antithetical activities. That's why we have industrial versus commercial versus residential versus open space etc. We also have to understand the fundamental differences between development control and pollution control. Development control is the one-off thing. You get a consent and it runs with the land and it inures for all time independently of any particular user. That has enormous consequences towards coming up with what is going to be your regulatory approach. You get one shot at it and so therefore you have to work out what other parameters we're going to put in place. Pollution licences are completely different. You can keep coming back at those year after year after year

and you can take into account changes in the environment, changes in technology, changes in society's approaches. You don't get that shot with development consent. So if you're going to ask what is the approach to regulation you'll get a very different answer if you're looking at planning [compared] to if [you're] look[ing] at pollution. [B]ut you can't separate them, because if you're going to give consent to a factory, then you're setting the fundamental parameters; the pollution licence can't take that away. You can't say don't operate the factory there anymore, in one sense it's a given. You're going to get the factory… So I think that we do need to look at that interplay between the planning issues and the pollution issues.

- Another of the phases that's not considered in Neil's paper is this concept of integrated development, a sort of one-stop-shop. That was a big thing in New South Wales but I think we would see that more generally. It was increasingly recognised by business that they were being hit by all these different regulators: you had the brown issues, the green issues, the planning issues, and when you worked out the number of regulators it came to tens of hundreds of different bodies. So there was a push to have one stop where you came to get it. In New South Wales that was the concept of the integrated approval. So the EPA and the National Parks and everyone… had to nominate what their approvals would be, and they don't get another go at it because once they nominate those approvals they go onto development consent and that's it. That means that when they then apply for their threatened species licence or their water licence for clearing near a protected area or a creek or they go to EPA, those agencies must grant a licence and must do so on the conditions that they notified at the planning consent stage. This is a very important point and it has severely constrained the way in which we can respond. Again it's fixing these parameters and showing the artificiality of separating out these issues. I don't think it's been overly successful because it has tried to anticipate and lock things in and it doesn't give that later flexibility.

5.2 Law, *regulation* and *governance?*

The questions raised immediately above suggest the need to address the fundamental relationship between the new environmental governance and earlier forms of environmental law and regulation. In particular, to what extent is it essential for the state to fulfil certain functions or can the state be effectively 'decentred', becoming simply one of a number of actors involved in governance but no longer privileged in terms of power and influence? And can the environmental policy initiatives of the last four decades be characterised as involving a gradual shift from law, to regulation and, now, towards governance?

While law (involving statutory commands and the imposition of sanctions for breach) was dominant in the 1970s and the early 80s, it gradually had to share the 'regulatory space' with other forms of social control, with persuasion, informal influence, negotiated agreements, environmental partnerships, and self- and co-regulation coming to the fore. 'Regulation' in its broadest sense (and a particularly 'light handed' form of regulation at that) took centre stage[37], although the laws of an earlier era were (as a result of public resistance or regulatory gridlock) only exceptionally repealed, and, particularly following environmental crises, gradually expanded. Indeed, if one looks at either the Anglo Saxon jurisdictions or the Directives of the European Commission, there is evidence that substantial pockets of command and control regulation are alive and well, and that even neo-liberal governments continue to favour this approach in some areas. Sabel and Zeitlin argue that even 'new governance' approaches are sometimes to be found in 'old style' instruments (for example, the Water Framework Directive)[38].

But during the late 90s and the early years of the new millennium, some would argue that a further development took place, one that involved a shift from 'regulation to governance' and roles for economic actors and civil society in self-managing what had previously been exclusive state responsibilities. In our view, this is an overstatement as only new governance can credibly claim to have 'decentred the state' and to involve 'governance' rather than 'regulation'. The other major initiatives of this period (regulatory flexibility, meta-regulation[39] and regulatory pluralism) have sought to 'regulate at a distance'. While these initiatives evidence an important shift in regulatory architecture and in the roles of the state, they have certainly not resulted in its 'decentreing'.

But even under the new environmental governance, certain central 'steering' functions remain with the state. What is involved is 'collaboration in the shadow of hierarchy' with the state underpinning community-based initiatives in a variety of ways without which they are unlikely to succeed. Indeed, research on three very different new environmental governance initiatives in Australia suggests that the state must continue to play three particular roles: definitional guidance (scope and anticipated outcomes, extent of participation, geographical boundaries, and funding arrangements), participatory incentives (positive and negative, including resources) and enforcement capability (to ensure that participants fulfil their obligations)[40]. Thus it is argued that in many contexts, there is an essential policy coordination role for government in encouraging, facilitating, rewarding and shaping such outcomes, Unless some other actor/s are ready, willing and able to take on this role. Usually they are not.

The broader point is that many, less-interventionist strategies are far less likely to succeed if they are not underpinned by direct regulation, for example to minimise free-riding and 'paper systems', to complement information-based strategies, to compel small business participation. Of course no market-based instrument evolves without some input from the state. For example, with an emissions trading scheme the government designs it, imposes the cap on emissions and polices compliance.

And lest it be forgotten, according to various surveys, the single most important motivator of improved environmental performance is regulation. The more general conclusion, as the USA EPA has recognised, is that: 'in some cases, nationwide laws and regulations will continue to be the best way to reduce risk. But in others, tailored strategies that involve market based approaches, partnerships, or performance incentives may offer better results at lower costs'. However, even the latter, it must be emphasised, are likely to work best 'in the shadow of regulation'[41].

All this suggests that environmental policy has strayed a substantial way from the classic precepts of neo-liberalism – the hollowing out of the state, privatisation and deregulation – and that a more accurate term to describe governments' behaviour (as distinct from their rhetoric) may be 'regulatory capitalism'. This implies using markets as regulatory mechanisms (rather than seeing them as the antithesis of regulation), the growth of a plethora of non-state regulators and of networks of governance, the expansion rather than the retreat of regulation (albeit in new forms) and 'hybridity between the privatization of the public and the publicization of the private'[42].

6. Conclusion

This paper has analysed four decades of environmental law, regulation and governance, principally in Anglo-Saxon jurisdictions. Stepping back from the detail of these developments and the particular successes and failures of individual instruments, the broader question remains: what sorts of architectures are likely to

work best in terms of effectiveness, efficiency and political acceptability? Unfortunately, the general answer to such questions is: it all depends.

Each of the architectures examined in this paper proposes its own solutions: the internalisation of externalities by mandating standards in the case of direct regulation, freeing up markets in tandem with establishing clear property rights in the case of market-based instruments, enrolling firms as more active participants in their own governance in negotiated agreements, establishing regulatory structures that provide for business flexibility while also strengthening the capability of individual institutions or enterprises for internal reflection and self-control in the case of regulatory flexibility and meta regulation. For Smart Regulation, it is a plethora of instruments which enable the state to steer not row, and to harness the capacities of second and third parties to fill the space vacated by the contracting regulatory state. From a civil regulation perspective, the state's principal role is to provide mechanisms that will empower the institutions of civil society to make corporations more accountable. And for the new environmental governance it is to empower local communities and other stakeholders to engage in 'on the ground' decision-making subject to central government oversight.

The point is that each of the above frameworks has something valuable to offer (albeit some have more to offer than others), none of them is 'right' or 'wrong' in the abstract. Rather, they make differing contributions depending upon the nature and context of the environmental policy issue to be addressed. The limitations of each of the major policy innovations, and of the architectures that underpin them, lead to a plea for pragmatism and pluralism. None of the policy instruments or perspectives examined here work well in relation to all sectors, contexts or enterprise types. Each has weaknesses as well as strengths, and none can be applied as an effective stand-alone approach across the environmental spectrum. Such a conclusion suggests the value of designing complementary combinations of instruments, compensating for the weaknesses of each, with the strengths of others, whilst avoiding combinations deemed to be counterproductive or at least duplicative. From this perspective, no particular instrument or approach is privileged. Rather, the goal is to accomplish substantive compliance with regulatory goals by any viable means using whatever regulatory or quasi-regulatory tools might be available. This indeed was the central message of Smart Regulation where a number of recommendations were made regarding the conditions under which different policy instruments and combinations thereof were likely to be more or less useful. In particular, Smart Regulation argued that policymakers should: design complementary instrument mixes rather than relying on single instrument approaches; prefer less interventionist measures to the extent that this is practicable; escalating responses up an instrument pyramid (utilising not only government but also business and third parties) so as to build in regulatory responsiveness and dependability of outcomes; empower third parties (both commercial and non-commercial) to act as surrogate regulators; and maximise opportunities for win-win outcomes.

While the above discussion suggests many policy makers and scholars are now willing to accept the need to design policy regimes with multiple instruments from the start, rather than focusing solely on one approach and treating the others as afterthoughts, this is not to suggest a static situation in which there is simply a 'menu' of options from which to select. On the contrary, the environmental challenges that policy makers confront has changed considerably over the last four decades, as has the balance between efficiency, effectiveness and political acceptability. These three criteria are often in conflict and trade offs between them are sometimes inevitable. In the 'first generation' of environmental law, effectiveness trumped efficiency but neo-liberalism, with its emphasis on market values and criteria, reversed this. And at times political

acceptability – or under neo-liberalism, some would say ideological purity – became more important than either efficiency or effectiveness.

Thus the main 'reforms' introduced by the neo-liberal governments of the late 1980s and early 1990s, with their focus on voluntarism and negotiated agreements, were by and large, markedly unsuccessful, but this did not seem to detract from their popularity with governments. And it was never clear that the regulatory flexibility initiatives of the late 1990s and beyond, were capable of delivering a 'big bang for the regulatory buck' given their focus on encouraging the top five or ten percent to become even better rather than on bringing laggards up to a minimum legal standard. Certainly meta-regulation (introduced usually after large scale disasters that demanded immediate political attention) placed a higher premium on effectiveness, but even the new environmental governance has sometimes been seen in terms of political expediency (enabling the passing of intractable problems to community level thereby avoiding central government blame). Governments of all persuasions are more concerned with political and economic dogma, than with rational and evidence-based decision-making. Witness, in Australia, the Rudd Labor Government's new Department of Finance and Deregulation – no longer is it necessary to debate the complexity of public policy, the answer in each case will be clear – regulation bad, deregulation good.

Whether the market failures that precipitated the current global financial crisis, or the ongoing revelations concerning billion dollar frauds for which unregulated or weakly regulated markets were equally culpable, will cause any major rethinking amongst governments about the roles of regulation, only time will tell. Certainly there are some early signs of a 'change in the wind' following the Global Financial Crisis. But if any such reassessment does not go beyond the realm of political rhetoric then the prognosis for efficient or effective regulation, may be dire. One is reminded of the comment of the UK Financial Services Authority Chairman Lord Turner, as the global financial crisis unfolded in late 2008:

> If a year and a half ago the FSA had wanted higher capital adequacy, more information on liquidity – had said that it was worried about the business models of Northern Rock – and had wanted to ask questions about remuneration, it would have been strongly criticised for harming the competitiveness of the City of London, for red tape, and for over-regulation … over-regulation and red tape has been used as a polemical bludgeon. We have probably been over-deferential to that rhetoric[43].

If there is one lesson to be derived from the history of environmental law, regulation and governance over the last four decades, it is this: matters are almost always more complex than politicians and policy-makers would prefer them to be. Unless they act on this realisation, and take advantage of the wealth of empirical evidence that has been accumulated in that period, then we are destined to repeat the mistakes of the past.

Roundtable participants

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Professor Neil Gunningham has degrees in law and criminology from Sheffield University, UK, is a Barrister and Solicitor (ACT) and holds a PhD from ANU. Initially trained in law, his subsequent post-graduate work was in interdisciplinary social science, and for the last fifteen years he has applied that training in the areas of safety, health and environment, with a focus on regulation and governance. He joined RegNet in January 2002 and is co-director of the National Research Centre for Occupational Health and Safety Regulation. Previously he was Foundation Director of the Australian Centre for Environmental Law at ANU, and Visiting and Senior Fulbright Scholar at the Center for the Study of Law and Society, University of California, Berkeley.

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