The Evolution of International Environmental Cooperation

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International environmental cooperation is a relatively new endeavor, appearing in a currently recognizable form within the last century, and becoming a major part of international relations only in the last three or four decades. During its brief history, the issues on which states have cooperated pertaining to the environment have shifted, as have the characteristics of the cooperative institutions established to address them. Some of these changes have come about because over time the environmental problems being addressed internationally have become more complex, both environmentally and politically. International environmental agreements, unlike some other areas of public international law, bind states, but for compliance require behaviour change primarily by private substate actors. The incentive structure in the agreements for these substate actors can thus have implications for how they are implemented. These incentive structures in collective selfregulation have changed from early agreements in which those substate actors whose behaviours needed to change directly benefited from their actions to protect a resource, to one in which the regulated industry gains little inherent advantage from being regulated. The time lag between activities that have environmental impacts and manifestation of harm has increased as well (and, conversely, the time between taking action to protect the environment and the beneficial effects of that action has increased). Both these issues relate to a change in types of uncertainty underlying global environmental problems. Other changes in the nature of the environmental problems being regulated have led to an increasing degree of influence on the part of developing countries in international environmental agreements. Despite this increased complexity, multilateral environmental agreements have continued to be a powerful tool for mitigating difficult environmental problems.

I ISSUES AND INCENTIVES

The types of environmental issues addressed internationally have changed over time, and with them the incentive structure of actors whose behaviours need to change to mitigate the environmental problem in question. The first substantive international environmental agreements reflected efforts to manage shared resources in a sustainable manner, primarily water and wildlife. The early wildlife treaties generally addressed animal species that migrated from one state to

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another (or existed in a shared geographic space like the oceans). They had in common an effort to manage a shared resource so that it could continue to be harvested over time. Though the terminology would have been different at the time, this approach reflects what we now think of as sustainable use. The 1911 *Convention for the Preservation and Protection of Fur Seals* is one of the earliest examples of this type of treaty; the 1946 *International Convention for the Regulation of Whaling* (ICRW) (preceded by two other whaling treaties in the 1930s) is another. Most international fisheries agreements, negotiated in a period that began roughly in the 1950s, also fit into this category.¹

Resource management agreements can be, compared with other international environmental agreements, relatively easier to reach, because the actors that are regulated benefit directly from the regulation itself. As the preamble to the 1946 ICRW puts it, whale stocks 'are susceptible of natural increases if whaling is properly regulated, and ... increases in the size of whale stocks will permit increases in the number of whales which may be captured without endangering these natural resources.' Whales, when left to their own devices, make more whales. If whalers can regulate whale catches so as to allow this to happen, their livelihood will be perpetually assured. Whaling states benefit, and whalers—the actual actors whose behaviour is impacted by the regulations—benefit if regulation works.

Despite this fortuitous incentive structure, agreement on even these issues can be difficult to reach for a number of reasons, most of which come down to the possibility that some states will want to free ride on the cooperative agreements. Each state would prefer, especially in an issue of sustaining a resource, that cooperative efforts limit the use of the resource so that it will exist indefinitely. But even better for a given state would be if all other states refrained from (for example) whaling so that the harm to the whale populations is kept within reason, but that it, itself, continue to catch as many whales as it can. Because this preference structure should hold for each state (or even for individual actors within the state), the danger always exists that someone will try to exercise this option. More importantly, because all states are aware of this incentive structure, they know it is possible that others will try to free ride on international cooperative agreements. If others do, they would be foolish themselves to uphold the agreement, and thus the entire process of cooperation can unravel. It is for this

M.J. Peterson, 'International Fisheries Management' in Peter M. Haas, Robert O. Keohane & Marc A. Levy, eds., *Institutions for the Earth* (Cambridge, Mass.: MIT Press, 1993) 249.

International Convention for the Regulation of Whaling, 2 December 1946, 161 U.N.T.S. 72, T.I.A.S. 1849 (entered into force 10 November 1948), preamble.

reason that monitoring strategies are generally included in such agreements. These monitoring provisions, even for resource agreements, have become stricter over time. Many fisheries agreements now require observers on board vessels to make sure that the catches recorded are accurate, and some fisheries agreements require satellite tracking of vessels. In fact, the types of monitoring provisions included in resource management agreements are generally more intrusive than in other issue areas. This may be possible because those who are regulated benefit directly from the regulations themselves as long as everyone upholds them. They may therefore be more willing under these circumstances to agree to intrusive monitoring provisions.

When we move to other areas of environmental cooperation, the direct benefit to the regulated actors diminishes. While it may be the case that states as a whole benefit from clean air or an intact ozone layer, the power plant operators, automobile manufacturers, or industrial users of chlorofluorocarbons (CFCs) do not themselves gain from environmental improvement that results from the restrictions placed on their activity. And while there may be some industries (in the case of water quality, for instance) that benefit from the clean water used as an input, these are rarely the industries whose behaviour is polluting the water in the first place.

The important implication of the move to regulating activities where those whose behaviour needs to change do not directly benefit from the environmental improvement it brings is that the actors to be regulated are likely to be more resistant to this change. We see this in the general resistance on the part of most industry (most notably in the United States) to serious action on climate change. Moreover, the need to appease industrial actors, who generally have political influence, has led to some of the forms of environmental regulation that Steven Bernstein elsewhere characterizes as 'the compromise of liberal environmentalism.' Mechanisms like tradable emissions permits and privatization of resources are ways to either try to fit existing incentive structures into the resource management model in which actors benefit from protection policies, or simply to make the actions taken less painful for the industrial actors who have the political clout to be able to prevent action altogether.

An interesting implication of this observation is that regulations crafted to give non-environmental advantages to regulated industry can thereby avoid political difficulties that come from opposition from some business actors. An industry that already meets standards to protect a given environmental resource (whether through domestic regulations or

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³ Steven Bernstein, *The Compromise of Liberal Environmentalism* (New York: Columbia University Press, 2001).

because of how it has chosen to do business) may benefit competitively from international environmental regulations. Because there is generally at least an initial cost to producing in a way that protects the environment, internationally competing industries that already meet a standard may gain from requiring others to meet that standard as well. In this case it is not that those regulated benefit intrinsically from the regulation, but that they benefit from those regulations relative to others who have not previously met them. Support may also come from businesses that make the things that would be used to respond to the environmental problem. This dynamic further supports the advantages of regulations that provide benefits to those who are regulated, but also has strong implications for the types of regulations that are chosen, as suggested above.

II TIME HORIZONS

Even those who agree to participate in international cooperative arrangements face a disconnect between short run and long run incentives. Environmental issues feature a lag between when actions that could harm the environment begin and when the environmental damage they cause can be discerned; conversely there is also likely to be a lag between actions taken to protect the environment and a noticeable environmental improvement. One of the important trends in international environmental regulation is that this time lag is much longer for the types of environmental issues currently addressed than it was for earlier international environmental problems. This is not accidental; environmental problems with a short time lag are easier to address than those with a longer one, and thus provided easier initial opportunities for cooperation.

This disjunction between time of action and impacts is true of almost all environmental issues, even the early resource conservation agreements, and has important consequences. While it may be true that if a resource is adequately protected the actors will all be able to continue to make use of the resource indefinitely, planning for this end may require sacrifice in the short run—a restriction in fishing this year so that fish will be around next year or ten years from now. The tradeoff may be worthwhile, but can be hard to make if the need for the resource right now trumps any long term planning. Fishers who will not be able to make payments on their fishing vessels if they do not make enough money fishing this year may not be around to benefit from the long-term health of the fish stocks. Developing states whose primary concerns are

⁴ Kenneth A. Oye & James H. Maxwell, 'Self-Interest and Environmental Management' in Robert O. Keohane & Elinor Ostrom, eds., *Local Commons* and Global Interdependence: Heterogeneity and Cooperation in Two Domains (London: Sage Publications, 1995) 191.

meeting the basic needs of their populations may care less about the long run health of ecosystems than the present use of resources to keep their people alive, and may be unwilling or unable to bear a short term cost for a long term gain. How much actors value the future compared to the present is called a discount rate, and it has been demonstrated that actors with a high discount rate (those who value gains in the present much more highly than gains in the future) will be less likely to protect a resource even with the collective long-term benefits that environmental protection can provide.⁵

Even a short time lag increases uncertainty: if you catch this fish today, it is yours. If you leave it in the ocean until next year, it (and perhaps several others) will be yours, as long as the cooperative efforts put into place to make all actors restrict their fishing have succeeded. Actors discount the future not only because of what they could do with the resource, or the money it brings, in the present, but because of the uncertainty about whether the promised resource will exist in the future. And given the uncertainty discussed above about whether others will indeed restrict their behaviour, doing so yourself in the short run can be risky—you bear a certain current cost for an uncertain future benefit.

This discount rate becomes much steeper as the benefits from environmental protection come further and further into the future. If we have not yet begun to feel the problems from climate change, and changing our behaviour now might make things better a century into the future, assuming everyone else goes along with restrictions as well, it can be difficult to accept costly behaviour change in the present. For many of the most pressing international environmental issues currently requiring international cooperation, the primary benefits of cooperation will appear decades or, more likely, centuries hence. This issue then also intersects with the question of advantages of regulation discussed above, as the actual people who benefit from environmental actions taken today may not yet have been born. Philosophical debates about the role of future generations in decisions to protect the environment abound; from a political perspective, however, those who do not yet exist have little political clout.

III THE MANY FACES OF UNCERTAINTY

An important characteristic of most international environmental problems about which international agreements are made is uncertainty, but what it is we are uncertain about has changed across issues in ways that characterize different eras of international environmental policy

J. Samuel Barkin & George E. Shambaugh, eds., *Anarchy and the Environment: The International Relations of Common Pool Resources* (Albany: SUNY Press, 1999).

making. Several aspects of uncertainty have already been discussed in this article: the uncertainty about whether other actors who have agreed to cooperate in protecting an environmental resource will do so, and the related uncertainty about whether, over time, a protected resource will indeed bring advantageous results to those who have undertaken measures to protect it. But there is a more central underlying uncertainty that frames environmental issues, about what causes the problems and what the environmental impact will be of various behavioural changes.

In the early resource agreements this uncertainty was about what a sustainable level of use would be (and, to a lesser extent, what level of resource use was already taking place). Most resource agreements created scientific committees to take information about the current level of resource use and recommend levels that would be sustainable. Later pollution issues featured uncertainty about the cause of the problem itself. For example, acidification of Scandinavian lakes was an environmental problem, but its cause was uncertain, since at the time it seemed implausible that pollutants could travel far enough to be coming from the United Kingdom or elsewhere in Europe. 6 Here again, research conducted by scientific bodies created as an essential part of international cooperation was able to ascertain the causes (and, in the case of acid rain, long-range transport) of pollution. Knowing the sustainable level of harvest or the transport mechanisms of pollutants does not solve all the political problems that underlie efforts to protect environmental resources; indeed, they can occasionally create new ones. (For instance, one reason states may have been willing to agree on a moratorium on mining in Antarctica, under the Environmental Protocol to the Antarctic Treaty, may have been continued uncertainty over whether, or where, valuable minerals are accessible). But resolution of uncertainty does avoid the important question about whether behaviours would have to change at all to protect the environment.

More recent environmental problems face a different type of uncertainty: about the very existence of the problem, or the impacts it might have. Beginning with the issue of ozone depletion in the 1980s, we have moved to environmental problems that are hypothesized before they are experienced. Ozone depletion is an excellent example of this type of problem. Research in the 1970s gave reason to suspect that CFCs could, in the presence of sunlight, destroy ozone molecules; other research indicated that CFCs were sufficiently stable that they could perhaps travel as far as the ozone layer. This led to international cooperative efforts to conduct scientific research into whether these substances were travelling that far, and what their effect would be.

Marc A. Levy, 'European Acid Rain: The Power of Tote-Board Diplomacy' in Haas *et al.*, *supra* note 1 at 75.

When international negotiations to address the potential problem of ozone depletion began, there was only limited evidence of any human impact on the ozone layer; the Antarctic ozone 'hole' (in reality a systematic thinning of the ozone layer over Antarctica) was only discovered as the Vienna Convention was being negotiated in 1985, and its human-induced causes remained unclear until after the agreement was completed.⁷

Climate change faces similar issues of uncertainty. Though the basic mechanisms linking increased human emissions of greenhouse gases and the global climate system are well understood, there are a number of factors about which there is legitimate uncertainty. What is the role of clouds? How do aerosols, increasing from some of the same activities that produce greenhouse gases (such as soot from power plants), impact temperature? More important is simply the fact the results of climate change have not yet been unambiguously felt. There is scientific agreement that the average global temperature has increased by small amounts and the sea level has risen a bit, both as predicted.8 But there is no smoking gun: neither have the impacts been strongly felt nor can any specific impact on its own be traceable to human impact on the climate system. Those who will be harmed by having to change their activities to prevent climate change know who they are and what the impact will be, but those who will benefit from mitigation have not yet clearly felt effects that can directly and unambiguously be traceable to climate change. From a political perspective, it is easy to understand why addressing this problem is difficult.

Moreover, in the ozone depletion and climate change examples, the long time horizons of these issues that make addressing them difficult in the present are the very reasons that they must be addressed before evidence of the problem is clear: because there is such a long time period between action taken and effects seen, waiting until the problems manifest themselves more clearly risks beginning to address a problem when it is too late to have the desired impact. These issues, and other recent ones such as persistent organic pollutants, are much harder to address than previous environmental issues because of the types of uncertainty they represent, but are especially important to address precisely for these reasons.

Edward A. Parson, *Protecting the Ozone Layer: Science and Strategy* (Oxford: Oxford University Press, 2003).

James J. McCarthy et al., eds., Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge: Cambridge University Press, 2001).

IV THE ROLE OF DEVELOPING STATES

Another important trend in international environmental cooperation is the changing role of developing states. Initially these states were more or less ignored in the process of international policymaking. But it became clear that on some issues their participation, whether or not they had contributed to the creation of the problem or were particularly impacted by it, was essential to environmental protection internationally. At the same time, because their future behaviours would have such an important impact on global environmental conditions, they gained bargaining power on some international environmental issues greater than they generally have in world politics. This dynamic has led to international mechanisms by which industrialized states compensate developing states for their environmental activities in a way that helps protect the environmental resources in question. When the incentives line up, everyone gains: developing states gain the ability to protect the environment without negatively impacting their development goals (and, perhaps, even contributing to them), and developed states gain the international cooperation they need to address environmental problems that affect them. The changing role of developing states is itself due to changes in the nature of environmental problems addressed. Most are problems of development, and impact the global commons. That means states remaining outside of the cooperative process have the ability to negate environmental improvements made by those who participate,9 and the relevant activities are sufficiently broadly related to industrialization that any developing state can have an impact on the environmental issue.

An important turning point for the role of developing states was negotiation of the international agreements to protect the ozone layer. Developing states, led by China and India, did not initially ratify the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, arguing that it would preclude development options that to them were of a higher priority than protection of the ozone layer. Their credible threat to stay outside of the agreement and develop while using substances prohibited within it resulted in the creation of the Montreal Protocol Multilateral Fund. Under this agreement, developed states give money to meet the full 'incremental costs' of developing countries in complying with the agreement; after its creation all the major developing countries joined the Montreal Protocol. ¹⁰ All major global environmental agreements negotiated since then have contained such

⁹ Barkin and Shambaugh, *supra* note 5.

Elizabeth R. DeSombre & Joanne Kauffman, 'The Montreal Protocol Multilateral Fund: Partial Success Story' in Robert O. Keohane & Marc A. Levy, eds., *Institutions for Environmental Aid* (Cambridge, Mass.: MIT Press, 1996) at 89.

funding mechanisms, some of them via the Global Environment Facility (GEF), a similar funding mechanism with a broader mandate. It now covers funding for climate change, loss of biodiversity, ozone depletion, issues of transboundary water resources, persistent organic pollutants, and land degradation.

Also notable is the structure of decision-making under these mechanisms. In most international institutions that provide economic assistance voting is pegged to contributions, so that donors have the greatest degree of influence over how the funding is used, with recipients hardly able to influence prioritization of funding. From the beginning the negotiations to set up the Montreal Protocol Multilateral Fund focused on how its decisions would be made, with developing countries refusing to participate unless their concerns were assuaged. They successfully lobbied for the creation of a new institution with a decision-making body composed of seven donor and seven recipient countries with rotating terms. Projects are approved by 'double majority' voting, in which any decision not taken by consensus requires a two-thirds majority, which must include a majority of states in both blocs. 11 Even in the GEF decisions are made by consensus in a Council split representation: sixteen developing states. industrialized states, and two states with economies in transition. 12

At the same time, the influence of developing countries in international environmental cooperation has limits, often influenced by the structure of the issues addressed. Developing countries have traditionally had a high degree of influence when their participation was needed to address global environmental issues of particular concern to the industrialized states. But when the concern rests with the developing states and the problem either is not transboundary or does not particularly impact industrialized states, that influence wanes. Some of the starkest environmental problems facing people in developing countries involve things like access to clean water, indoor air pollution, and sanitation. An illustrative example is the negotiation over the 1994 United Nations Convention to Combat Desertification. On most of the contentious issues in the creation of this agreement—whether the problem would be identified as global, whether the convention would address the socio-economic causes of desertification, and whether a funding mechanism requiring new and additional aid transfers from developed to developing states would be created—the developing states did not get what they wanted. 13

¹¹ Ibid.

Global Environment Facility, 'Council', online: http://www.gefweb.org/participants/Council/council.html.

Pamela Chasek, *Earth Negotiations* (New York: United Nations University

In the broader scheme of things, the general principle that richer states should help poorer states pursue environmental protection, and the related idea that developing states should initially have more lenient obligations in international agreements, are rapidly becoming accepted norms. In this way, the normative role of developing principles of customary international law (in this case the idea of 'common but differentiated responsibilities') clearly has effects that take international policymaking beyond naked self-interest. Indeed. desertification difficulties, described above, have been mitigated by the recent inclusion of desertification in the focal areas of the GEF.¹⁴ As the interconnectedness of economic and environmental issues, and the global aspects of even local environmental problems, become clearer, and the norm about special consideration for developing countries generally expands, this trend will likely increase. This norm has its own complications, however. It is, in many ways, a fair way to deal with the responsibility that industrialized states bear for their contributions to existing environmental degradation. But it also makes environmental agreements more costly for developed states that are already, because of the increasing complexities addressed above, facing more difficult decisions about whether to cooperate internationally on environmental protection.

V MULTILATERAL ENVIRONMENTAL AGREEMENTS

What of the international environmental agreements themselves? Do they have any independent effect, once negotiated? When making an argument about the incentive structures that underlie and shape international environmental cooperation it is easy to lose sight of the effect of agreements themselves. One the one hand, it could be argued that treaties are simply the outcomes of the process of negotiation, codifying the results of the political jockeying that preceded them. But in the area of international environmental politics, the agreements that get adopted are rarely the end product, but instead create the framework and the process that guide responses to the environmental problem in question.

The increasing propensity to first create framework conventions, in which states agree on principles, set up a process for decision-making and find ways to increase and make use of scientific research to decrease some kinds of uncertainty about the extent or effects of the environmental problem, is one manifestation of this

Press, 2001).

United Nations Convention to Combat Desertification, Press Release, 'GEF Assembly endorses demands made in Agadez' (26 October 2002), online: http://www.unccd.int/publicinfo/pressrel/showpressrel.php? pr=press26_10_02>.

process. These conventions are later followed by negotiation, within the framework they set out, of protocols in which the specific abatement measures are elaborated. The initial characterization of the framework convention matters. A number of substantive protocols—those pertaining to European acid rain, to ozone depletion, and to climate change, to name just a few—would have been impossible to negotiate without the new scientific information created, or interpreted, within the information gathering processes in their framework conventions. In addition, agreement in principle on the problem and a basic desire to address it can be essential in the process of cooperation; once states have agreed to address a problem it may become normatively harder to refuse to participate in specific measures that are aimed at ameliorating the problem.

Other types of environmental agreements have different structures that fulfill similar functions in allowing for the evolution of obligations: many resource management agreements, such as those regulating fisheries, set up commissions that make annual decisions about levels of harvest. In these cases, the process these agreements create is what is directly responsible for the changing obligations. Treaties that identify endangered species to be protected, or that specify chemicals that cannot be used or substances that cannot be dumped in the ocean, listed in an Appendix or Annex, follow a similar regulatory model in which the agreement itself outlines a process for changing obligations. These agreements are thus less the end point of a negotiation than the elaboration of the process through which continual negotiation will take place over time.

While strong enforcement mechanisms are rare in international environmental agreements, additional aspects increase the likelihood that states will live up to the agreements they create. Reporting requirements make it easier to determine when states are not doing what they have agreed to do, and increasingly intrusive types of monitoring (such as mandating observers on fishing vessels) have been created within existing agreements. Since the mutual benefits from cooperation accrue only if others live up to their obligations, reassurance that they are likely to do so increases willingness to participate.

Moreover, across international agreements, the processes, and often the norms that underlie them, gain further acceptance and become adopted elsewhere. The principle of common but differentiated responsibilities (especially the aspects calling for developed countries to take environmental action first, and to provide assistance to developing countries in meeting their obligations) has developed across international environmental agreements to the point where it is almost automatically included when a negotiation process begins. The expanding use of the precautionary principle is another example. The role of international agreements in helping to codify and expand these

norms exists apart from their focus on addressing a specific environmental problem.

CONCLUSIONS

International environmental cooperation is hard and is getting harder. Characteristics of the problems to be addressed, both environmentally and politically, make many of the current environmental issues more difficult to address than was true of earlier efforts at international environmental cooperation. But a number of the processes and approaches created to address environmental problems previously can help the process of doing so now, as the world turns to problems with more difficult incentive structures, longer time horizons, greater uncertainty, and a need to involve all states in cooperative solutions.

Some reassurance can be taken from the largely successful international efforts to protect the ozone layer, which evinces several of the more difficult conditions for multilateral environmental cooperation addressed here: the regulated actors did not benefit from the protection of the resource, the time between action taken and environmental improvement was long, and the problem needed to be addressed before the process or its effects were fully understood. Some states, whose participation was essential, were not especially concerned about this environmental problem relative to others they faced. The success of the international agreements to protect the ozone layer came from working within the framework laid out here. Affected industries in some of the major states were already regulated, thanks in part to action from nongovernmental actors. These industrial actors were therefore willing to agree to international regulation because it evened the economic playing field with their competitors. 15 Similarly, developing states were able to organize and advocate for economic assistance to meet the requirements of the agreements as a condition for joining. This process proved valuable for all parties concerned, since ozone depletion could be successfully mitigated collectively, developing states would not have to compromise their development goals in order to do so, and all states would eventually benefit from the protection of the ozone layer.

This success story provides some cautions as well, however. Because of an effort to work within existing incentive structures, or to modify them such that the major actors would be willing to take action on this issue, the approaches used were not radical. On the one hand, moderate fixes—substituting a chemical that does not deplete the ozone layer for one that does—do not provide the dramatic change in the

Elizabeth R. DeSombre, Domestic Sources of International Environmental Policy: Industry, Environmentalists, and U.S. Power (Cambridge, Mass.: MIT Press, 2000) at 94.

human relationship to the environment that would be the most beneficial route to environmental protection. On the other hand, such a radical change is unlikely to happen, since states are the ones to negotiate international agreements and few states have shown a willingness to radically rethink the economic structure that can underlie environmental problems. Given the difficulty of the modest but useful forms of international environmental cooperation outlined here, many have chosen to push for the possible over the ideal.

Additional trends, examined in this *Journal* by others, also bear watching. The increasing role of non-governmental actors, both environmental activists and businesses, is likely to have broad impacts on the direction of multilateral environmental cooperation. New forms of cooperation—the move to public-private partnerships or non-binding agreements—are also becoming more prominent. But states remain central actors in international environmental cooperation, and many of the concerns expressed about the modest outcomes possible with multilateral environmental agreements would apply to these mechanisms as well.

The experience of multilateral environmental cooperation thus far should nevertheless leave us feeling relatively optimistic. As outlined here, the environmental problems faced globally have become more complicated, in incentive structures, time horizons, and uncertainty, and have necessitated new mechanisms for involving developing states. Despite this increasing degree of difficulty, states have moved forward with increasingly substantive agreements for addressing global environmental problems. By integrating research into mechanisms of cooperation, including monitoring to ensure that states live up to their obligations and thus diminish some of the difficulties of increasing time horizons, providing compensation to developing states for changing their environmental behaviours, and generally working to line up the incentive structures of various actors, multilateral environmental agreements have managed to mitigate difficult environmental problems, and can continue to tackle the new ones that will inevitably arise.