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DEFINING AND DISTINGUISHING INTERNATIONAL ENVIRONMENTAL PROBLEMS

Before analyzing the processes of international environmental politics, it is useful to define what international environmental problems are, to review the history of their development, and to develop conceptual categories of such problems. This chapter starts by defining international environmental problems and by asking how we can distinguish environmental problems from other problems, domestic problems from international problems, and problems from non-problems. It then describes the appearance of international environmental problems on the international agenda and how the mix of problems addressed on that agenda has changed over time. The rest of the chapter outlines categories that allow the identification of similar political patterns and dynamics across problems that are quite diverse, in an ecological and environmental sense. It also asks, how do the politically-important characteristics of international environmental problems vary? What aspects of such problems deserve our attention if we want to understand international environmental politics? These categories provide the foundation for analyzing, in future chapters, the sources of international environmental problems, the forces that can lead to their emergence on the international agenda, the dynamics that can influence the success of negotiations, and the factors that can explain when states are likely to reduce their environmentally-damaging behaviors.

Defining International Environmental Problems

If we define international environmental *politics* as the array of political efforts to address international environmental *problems*,

then understanding the former requires a meaningful and useful definition of the latter. Such a definition should meet certain criteria. It should correspond as much as possible to standard usage. It should not be so broad as to identify all human impacts on the environment as problems and all environmental problems as international. But it should allow us to identify 'latent' international environmental problems; if we define identify international environmental problems as those addressed by international environmental politics, then it precludes engaging crucial questions on why some are addressed rapidly, others slowly, and some not at all. Finally, the definition should acknowledge that international environmental problems are socially constructed. It should allow us to distinguish between the environmental *impacts* humans have on nature – which are objective facts – and environmental *problems* – which involve subjective assessments, perceptions, and valuations that are often contested. Given these criteria, we can define international environmental problems as 'those impacts on the natural environment of human activities that some significant set of people view as negative and that have either a transboundary or international commons aspect'. This definition has three parts: an 'environmental' part, a 'problem' part, and an 'international' part.

Let us start with the 'environmental' part: 'those impacts on the natural environment of human activities'. Many, and perhaps most, international issues are situations in which some human activity influences other humans. And, in many cases, war, trade, globalization, and human rights violations involve processes that also harm the environment. But those environmental impacts are not central to what those concerned consider to be 'the problem'. Environment impacts are, however, central to many problems that have been, and still remain, on the international agenda. The definition here seeks to distinguish issues in which the state of the natural environment plays a role from those in which it does not. This includes issues such as the exploitation or destruction of living natural resources like trees, fish, other plant and animal species, biodiversity, and habitats. It encompasses issues in which environmental well-being also plays some role, even if it is a secondary one. Thus, nuclear weapons testing should be treated as an environmental problem if concerns about it extend beyond the security realm and involve the damage such testing causes to the environment. The definition excludes the exploitation of non-living natural resources (such as oil and mineral deposits) except to the extent that the processes by which we extract and use such resources generate concern about environmental well-being. The definition also excludes the impacts of naturally-generated hurricanes, drought,

earthquakes, tsunamis, and disease; while these forces drastically alter the environment and have major impacts on people, it seems useful to treat them as environmental only if they are caused, exacerbated, or altered by human activities.

The definition's 'problem' aspect is 'that some significant set of people view as negative'. 'Environmental problems' are not objectively identified or discovered but are defined by human judgments regarding our influences on nature. The objective affects of clear-cutting a square kilometer of forest have changed very little over time but doing so was considered 'progress' in the 1700s and is considered a 'problem' today. The killing of whales and fur seals has changed from being viewed as an appropriate economic activity to being viewed as a problem of unrestrained exploitation reducing any future harvest to being viewed as a problem of overexploitation threatening a species to being viewed as a problem entailing environmental 'immorality' (D'Amato and Chopra, 1991). Wetland drainage was the intended goal of much development policy for many years before wetland loss came to be considered a major problem. Although this part of the definition introduces an admittedly unsatisfying imprecision by defining an environmental impact as a 'problem' only if a 'significant set' of people consider it as negative, it seems superior to the alternatives. If nobody considers an impact as negative, then surely it is not a problem; if everybody considers that impact as negative, then surely it is. Like 'folk theorems' in game theory (Fudenberg and Tirole, 1991), the goal is to capture the intuition that, somewhere between these extremes, lies a point at which when 'enough' people consider certain impacts to be negative then they become, subjectively, problems. We cannot specify that point in advance, since what constitutes a 'problem' depends on both how many people are concerned and how concerned they collectively are. But we can say that when a large number of people or a small number of politically important people become sufficiently concerned, most people would agree that 'a problem exists'. 'Some significant set' of people need not be most people on the planet but may consist of a few activists, scientists, or others who observe an impact, consider it a problem, and self-consciously attempt to convince others likewise.

The definition contends that problems exist when people consider human impacts on nature as negative, whether or not the human benefits of the responsible activities generate more-than-offsetting benefits and whether or not solutions are available and sufficiently cheap that people support their adoption. A problem must exist before efforts to assess taking action and to devise solutions can begin. Indeed, recognizing an activity's environmental harm is usually what

prompts the creative social processes that generate potential solutions. The definition proves analytically useful because it allows us to engage the question of why some impacts become 'problems' quickly, some slowly, and some not at all. It also excludes those human impacts that few, if any, people consider as negative. Thus, the industrial pollution of rivers has been of international concern for decades but the active chlorination and fluoridation of water that many countries undertake to promote human health also contributes to environmental impacts that have yet to become of significant environmental concern.

The 'international' part of the definition is that they 'have either a transboundary or international commons aspect'. Environmental problems are international if the responsible activity, the impacts of that activity, or the concern about (and solutions to) those impacts do not all exist within one country's borders. Certain problems are more likely to receive international attention. At one extreme, norms of sovereignty hinder efforts to internationalize environmental problems that exist solely within one country. Those norms legitimize the rights of national governments to balance, and to differ in how they balance, the interests of the former and those of the latter. Thus, land use change – the conversion of forests into cropland, wetlands into residential areas, and coastal zones into aquaculture farms – dramatically alters the environment but has received little international attention because the responsible activities, their immediate impacts, and the concerns they raise tend to be contained within one country's borders. Likewise, the pollution of rivers or lakes that exist within one country's borders has rarely received international attention: pollution of the Mississippi River, the Amazon or Lake Baikal, or the desiccation of Mono Lake or the Aral Sea (before the breakup of the Soviet Union) have generally not been treated as *international* environmental problems.

As the spatial span of activities, impacts, or concern grow, however, problems are more likely to be considered international. Activities that occur wholly within one state's borders but have impacts on the atmosphere, transboundary rivers and lakes, or ocean zones are more likely to prompt concern in other states and, hence, to become international. Regional problems such as acid rain, river pollution, and marine pollution tend to arise on the international agenda only when their impacts cross borders. Acid rain has generated more international attention in Europe than in North America because closer borders mean that economic activities that generate few transborder impacts in the United States generate many such impacts in Europe. Although such transborder impacts

are often the unintended consequences of economic activities, they can result from conscious efforts to displace environmental problems, as in the export of hazardous waste, transforming otherwise local environmental problems into international ones (Wapner, 1997: 228).

Activities that take place on or influence shared resources, like shared rivers and lakes, will become international issues relatively rapidly if the victims of those activities find domestic routes for redress ineffective. Activities within a country's borders that have impacts on a global commons will become international only after those impacts are identified and concern about them grows. Thus, stratospheric ozone depletion and climate change are caused primarily by activities occurring within countries' borders whose impacts affect the global atmospheric commons – so they became international issues only after scientists identified those impacts and concern grew in various countries. By contrast, activities that occur on a global commons often 'begin life' as international problems precisely because neither the activities nor their impacts exist within any single government's realm of sovereignty. High seas fisheries, Antarctica, and outer space are considered global commons with the assumption that whether, what, how, and how much of given activities take place on them is an appropriate subject for international dialogue. Marine pollution is international in at least three respects: land-based pollution from most states degrades the world's oceans; pollution from international shipping on the commons also degrades the commons; and pollution that occurs on the commons also degrades the environment of ocean-bordering states.

Two other factors make environmental problems likely to be international. First, the activities and impacts of some environmental problems can occur within a single country but become international when citizens in other countries become concerned about those impacts. Just as human rights violations become internationalized because citizens in other countries express concern even when they are not directly affected, environmental impacts that appear to be domestic can become international because of concern in other states. Thus, the local extinction of a species due to local activities – such as the endangerment of various species in the United States – may remain a domestic environmental problem because the citizens of other countries express little concern about them. By contrast, species endangerment generally is an international problem because, in the aggregate, people from many countries are concerned about preserving species and biodiversity both in the global commons and

in other countries. Second, some environmental problems are local but ubiquitous, involving truly local environmental problems that happen to occur in many countries. Such problems can become internationalized if international cooperation appears to offer advantages in understanding or addressing the problem. Globalization fosters such perspectives since international trade means that consumers' choices in one country have environmental impacts in others and international media means that people are better informed about environmental degradation abroad. As tropical deforestation demonstrates, local companies still do considerable local environmental damage but they do it increasingly on behalf and under the scrutiny of foreign customers (Dauvergne, 1997).

This book's focus on *international* environmental problems should not obscure the many important *domestic* environmental problems. Pollution of rivers that do not cross national borders occurs in many countries but receives less international attention than that of transboundary rivers. The local extinction of local populations of plants or animals may go unnoticed beyond the affected country's borders if populations are thriving elsewhere. Toxic, hazardous, and nuclear waste disposal within a waste-generating state's borders poses a major, but usually domestic, environmental problem. Efforts to internationalize temperate and boreal deforestation have been less successful than those targeting tropical deforestation. Urban air pollution, despite its ubiquity, remains almost exclusively a domestic, and even a municipal, concern.

The definition here is intended to define international environmental problems in ways that highlight – and allow us to better engage – important political questions as to why certain environmental impacts become 'problems', why certain environmental problems get addressed on the international agenda, and why international environmental problems differ, and are treated differently, from non-environmental problems.

A Brief History of International Environmental Problems

Given this definition, what is the list of all current international environmental problems and how has that list changed over time? This section notes the obstacles to generating such a list but then seeks to provide a plausible sense of the history of international environmental problems.

How might one generate a comprehensive list of international environmental problems? One might start with those problems that states have addressed through bilateral or multilateral treaties. One might then add government efforts to foster environmental improvements in other countries through financial aid, investment, technology transfer, training programs, and policy diffusion. One might further add the many international environmental projects undertaken by nongovernmental organizations and international organizations. But such a list includes those international environmental problems *that have been addressed* but not *all* international environmental problems. Indeed, it would be surprising (pleasantly, to be sure) if we currently have addressed – even if inadequately – all international environmental problems. But many human behaviors that harm the environment are not yet treated as international environmental problems. Indeed, knowing which problems have *not* been addressed is crucial for identifying where environmental progress is slow, why some problems are addressed and some are not, and why those that are addressed are addressed when they are. How can we identify these unaddressed problems, these 'dogs that didn't bark' to use Sir Arthur Conan Doyle's metaphor? Conceptually, given the definition above, the list of international environmental problems should start with all human influences on the environment, should take from that the subset that a significant set of people consider a problem, and should then take from that the subset that are international in character.

No ready-to-hand source exists for such a task. But the list of existing international environmental agreements does provide some insight even though it fails to capture those problems that have been recognized but still remain unaddressed at a particular point in time (the following history draws from Mitchell, 2008). The precursors to what would now be considered 'environmental' problems emerged on the international agenda as early as 1351, when England and Castile (the predecessor of Spain) negotiated an agreement to address fisheries (Giordano, 2002a: 608). By 1875, various countries had signed more than 40 bilateral agreements addressing the problems of fisheries' access or allocation (Giordano, 2002b). These initial fisheries' agreements were not environmental, at least in the present-day sense. They were created to avert conflicts that might otherwise have arisen over the terms under which each country's nationals had rights to the fish in a shared river or in international waters. Catch levels were rarely so high as to threaten the health of the underlying stock but international conflicts could still break out on the high seas or in rivers if one country's catch impinged on another's or conflicts

among fishers of different nationalities threatened to generate larger problems. Although most current international fisheries are plagued by collective overappropriation, the distribution problems central to these early treaties continue to trouble international fisheries management (see Krasner, 1991). Although over-appropriation had not become a problem for most fisheries, it had for fur seals. By the late 1800s, seal populations were so decimated that states agreed to limit the season for sealing near Jan Mayen in the Arctic and to ban pelagic sealing in the north Pacific. Present-day problems of invasive species were also already visible by the late 1800s in the transnational propagation of contagious animal diseases and of wine parasites (*phylloxera vastatrix*) . River management had also become part of international affairs, with conflicts arising over the diversion and distribution of water and over efforts to channel river flow. States had recognized and begun to address all these problems by the late 1800s.

From 1900 through 1950, a wider range of human environmental impacts emerged on the international agenda. Threats to, and the value of preserving, certain species were recognized in a 1900 treaty in which six European countries and the Congo banned all hunting of giraffes, gorillas, chimpanzees, mountain zebras, and several other species 'on account of their rarity and threatened extermination' (Convention for the Preservation of Wild Animals, Birds, and Fish in Africa). By 1933, various colonial states had recognized that many African plants and animals could only be preserved by creating large natural parks and reserves (Convention Relative to the Preservation of Fauna and Flora in their Natural State). The hunting of birds had taken such a toll that it was regulated under multilateral treaties in 1902 and 1950, as well as in bilateral agreements between the USA and Canada, Denmark and Sweden, and the USA and Mexico. Contagious diseases of livestock and plants transmitted through trade continued to show up on the international agenda, as did locust plagues that harmed international agriculture. Transboundary pollution was recognized in the regulation of the transport of flammable substances on the Rhine, in international regulations regarding the use of lead in paint, and in the damage caused in Washington State in the United States from air pollution from Canada's Trail Smelter. The League of Nations unsuccessfully tried to address marine oil pollution in the 1920s. Whaling was regulated by a 1931 convention and other fisheries continued to receive much international attention, with countries negotiating over 100 fisheries agreements, including many that addressed overappropriation as well as allocation. The increasing ability to dam rivers for flood control and energy

production also prompted efforts to manage the international implications of such engineering.

Since 1950, the number and range of international environmental problems have continued to increase. Fisheries, river management, and the protection of endangered species remain central to the international landscape. Endangered species have been treated as both global and regional problems and as both individual species and within frameworks that address large ranges of species. Environmental problems began to be viewed in more interconnected terms, with an increasing focus on habitats and not just species. Marine oil pollution began being addressed in the 1950s, and was soon followed by marine pollution from the dumping of waste, chemicals, sewage, and other substances, as well as river and lake pollution. These problems have been addressed within global frameworks and as problems requiring region-specific solutions, often within the context of protecting a particular sea or a particular part of the ocean. International efforts were made to manage nuclear energy and to eliminate the radioactive pollution from atmospheric nuclear testing in the early 1960s. Acid rain became an international issue in the 1970s among European and North American states but has received little international attention in other regions. Stratospheric ozone depletion emerged on the international agenda in the late 1970s and early 1980s, while and climate change, biodiversity loss, and desertification emerged in the late 1980s and early 1990s.

If we use negotiation of treaties as an available, if inadequate, proxy, we observe that states have paid increasing international attention to environmental problems over time. Discussions of international environmental problems were rare until the last half of the twentieth century. Until the 1920s, such issues were the topic of international negotiations only two to three times per year. From 1925 to 1949, that rate increased to four to five times per year and, in the 1950s, to 15 per year. International agreements were signed approximately 25 times per year in the 1960s, 50 times per year in the 1970s, 35 times per year in the 1980s, and almost 80 times per year in the 1990s (these statistics include bilateral and multilateral discussions that generated new agreements, protocols, or amendments: see Mitchell, 2008).

Successful agreements also document changes in what environmental problems states think about and how they think about them. Fisheries and species protection were the focus of 80 to 90 per cent of all environmental negotiations until the 1950s but now constitute only 40 to 50 per cent. Pollution of rivers, the marine environment, and the atmosphere constitutes 25 to 30 per cent of

recent multilateral environmental negotiations. States treat an increasing proportion of the environmental problems on the international agenda as multilateral rather than bilateral problems. Multilateral agreements were rare early on in the history of international environmental affairs but now constitute 30 to 40 per cent of all agreements, despite dramatic increases in the number of bilateral agreements. And states increasingly frame environmental problems in eco-systemic terms, increasingly seeing the preservation of habitats and eco-systems as valuable in its own right as well as essential for preserving particular species.

Distinguishing Environmental Problems

To begin to understand international environmental politics requires us to distinguish among the range of international environmental problems in ways that shed light on why the politics surrounding one problem can differ so markedly from those surrounding another. This demands categories that reflect politically important differences rather than ecologically important ones, categories that account for the interests, power, and knowledge of states that are so central to explanations in other realms of international relations (Hasenclever et al., 1997). Scholars have often looked at the characteristics of an activity, issue area, or problem for explanations of why states cooperate in resolving some international problems but not others (Rittberger, 1993: 13). There is a compelling logic to the idea that 'certain inherent characteristics of issues or conflicts predetermine the way in which ... issues or conflicts will be dealt with' (Rittberger, 1993: 14). Problem structure becomes important because certain problems seem more difficult for states to resolve than others, that is, some problems are likely to be more malign than others (Miles et al., 2002). Problem structure is also assumed to influence what solutions states will adopt to resolve their conflicts (Young, 1999b: Chapter 3; Mitchell, 2006). Game theory has provided invaluable insights into how the relationship among two or more states' incentives can make international environmental cooperation difficult, even under the most simplified conditions (Martin, 1992b; Zürn, 1998). The discussion that follows builds on game theory's insights that incentives are important causes of environmental problems but notes that incapacity, power, knowledge, and values also play important roles in why international environmental problems occur or don't, why they make it onto the international agenda or don't, why states adopt cooperative solutions or don't, and why states succeed in implementing those solutions or don't.

Before detailing the factors that cause or exacerbate international environmental problems, it is helpful to delineate two important overarching distinctions among environmental problems. The first is the distinction between overappropriation and degradation. The second is the distinction among Tragedies of the Commons, upstream/downstream situations, and incapacity problems.

Overappropriation, degradation, and accidentally-harmful problems

People derive value from environmental resources in one of three ways: through consumptive use; through non-consumptive use; or through simple knowledge of their existence. Consumptive use involves people extracting units that flow from an environmental resource and using them in ways that preclude their use by others and also preclude their being returned to the environment in the form in which they were extracted. Examples here include fishing and hunting. Non-consumptive use involves actions that do not prevent others from taking the same action but do decrease the quality of the environmental resource in question. Examples include air, river, and marine pollution, as well as habitat degradation. Existence value involves actions that, when taken, do not preclude others from taking the same action and do not reduce either the flow from, or the quality of, the environmental resource. Examples include the pleasure that people derive from enjoying nature or from simply knowing that certain species are protected from extinction.

The behaviors by which people derive existence value do not impinge on other people or harm the environment and, so, do not create environmental problems. But both consumptive and non-consumptive uses can have environmental impacts and reduce the value that other people derive from the environment, and hence these can become environmental problems. Environmental impacts occur whenever the level of human use exceeds the environmental amenity's 'carrying capacity', defined as the environment's ability to restore itself promptly to its pre-use condition. If environmental impacts become large enough that a significant set of people consider them negative, they will generate two types of environmental problems. Excessive consumptive use will produce overappropriation problems while excessive non-consumptive use will produces degradation problems.

Overappropriation problems can be defined as problems in which people derive value from some environmental resource by appropriating a flow of units from it, in which they value the amenity

based on how many units they can appropriate, and in which one person's use of a unit precludes its use by another. Overappropriation involves *consumptive* use that exceeds the resource's ability to *replenish* itself and decreases the *quantity* of that resource available to others. Imagine a large lake used for fishing. Individual fish reproduce and die at rates that generate an annual 'recruitment rate' for the fish stock as a whole. Given a certain stock size, that recruitment rate (percentage of stock per year) produces a certain number of fish that can be caught each year without reducing the stock size. Overappropriation occurs if more than that number of fish is caught, leading to a declining stock. Such overappropriation makes it increasingly difficult for those who rely on fishing to catch the same number of fish and, eventually, the stock decline may make it so costly to catch a species that it becomes 'commercially extinct', if not ecologically extinct. The threats to and decimation of various species, including whales and other marine mammals as well as terrestrial animals including elephants, tigers, rhinoceroses, and others have resulted, at least in part, from overappropriation. Likewise, agricultural water use – in which water drawn from a river returns to aquifers rather than the river – also involves an overappropriation problem.

Degradation problems, by contrast, can be defined as problems in which people derive value from some environmental amenity by having access to the stock of that amenity, in which they value the amenity based on the quality of that stock, and in which the use of the stock by one human has little impact on the *ability* of others to use that stock but does influence the quality of the stock. Degradation involves *non-consumptive* use that exceeds the resource's ability to *restore* itself and decreases the *quality* of that resource available to others. Imagine a long river that provides municipal, industrial and agricultural water and serves as a repository or 'sink' for intentional discharges of chemical pollutants and sewage and unintentional runoff of agriculture pesticides and fertilizers. Downstream water users can still take water from the river, but upstream polluters have decreased the quality of that water, making it more costly to provide the quality of water needed for downstream drinking, agricultural use, or industrial purposes. Sewage, garbage, and oil and chemical pollution disposed of by tankers, container ships, and other large ocean-going vessels decrease the quality (not the quantity) of ocean water, making bathing, beach-combing, and other ocean-related activities less enjoyable.

Overappropriation and degradation problems can, therefore, be distinguished by asking whether people derive value from the

environmental resource by consuming units of the resource (for example, harvesting animals from a stock) or by non-consumptive uses that degrade the resource by discharging something into it or by extracting it temporarily from the environment and then returning it at a lower level of quality than before. Some environmental resources exhibit both types of features, of course, and then it becomes important to recognize both the distinct aspects of each problem type and the interplay between them.

Because overappropriation often produces immediate and visible resource shortages, it can generate more political conflict than degradation problems (Koremenos et al., 2001). Overappropriation often involves an inherent competition among appropriators unrelated to its environmental impacts, a problem that does not exist in degradation settings. Overappropriation conflicts are never merely – and often not centrally – about how current use levels impact future use levels, but are over allocating the current appropriation, over who gets more water, fish, whales, or polar bears today. Indeed, in arid regions like the Middle East, the conflict over freshwater is quite intense even though current use has little influence on future availability (which is driven by precipitation and recharge rates). Shortages caused by one state's overuse of a resource can create economic conflicts that are exacerbated by national loyalties in which the overappropriation of water, fish, and other environmental resources by foreigners is considered far less politically acceptable than overappropriation by fellow citizens. Indeed, the heatedness with which both international water and international fisheries conflicts are fought (in contrast to the rarity of such conflicts with respect to international pollution problems) provides strong, if anecdotal, evidence of this dynamic (Hart, 1976; Gleick, 1993; Lowi, 1995; Postel, 1999; Barkin and DeSombre, 2002).

The overappropriation/degradation distinction also maps onto how alternatives are perceived. Pollution and other degradation problems are usually the unintended by-products of activities undertaken for other reasons. Because their impacts are unintended, resistance to addressing them tends to depend on the availability, cost, and logistical obstacles to transitioning to environmentally-friendly alternatives. The environmental impacts of most over-appropriation problems, however, are inherent to the responsible activity. Fish cannot be simultaneously harvested and left in the ocean to reproduce; trees cannot be simultaneously harvested for timber and left standing. Resolving these problems requires changing the level of the activity and not the process by which it is conducted. Demand for the resource in question must be reduced or redirected into other activities.

Both overappropriation and degradation problems become problems only at the point at which aggregate human demands on the resource approach the resource's ability to meet those demands, that is, its carrying capacity. For centuries, people could catch fish, kill polar bears and rhinos, cut down trees, and draw irrigation water without impinging on the ability of others to do the same. Likewise, levels of land, air, and water degradation from various human activities remained well within the regenerative capacities of the environment for centuries. International environmental problems have become – and are likely to become more – common because population growth and economic growth together have increased the aggregate human demand dramatically, leading to a growing number of environmental resources being overappropriated or degraded.

Finally, some environmental impacts result from accident-prone activities. Some activities have unintended environmental effects that the responsible parties themselves would prefer to (and may well already be making efforts to) avoid. Consider oil or chemical spills in the ocean or in rivers, nuclear reactor accidents, and toxic releases. Such problems attract international attention whenever their impacts have been or may be international. For these activities, any resistance to engaging the environmental problem will depend on the degree to which the immediate economic interests of the responsible parties are harmed by the accident, independent of any additional environmental harm.

Tragedies of the Commons, upstream/downstream problems, and incapacity problems

Another important distinction among environmental problems is that among Tragedies of the Commons, upstream/downstream problems, and incapacity problems. The first two problem types are distinct in terms of the types of incentives that lead to environmental damage and both, in turn, are distinct from problems in which incapacity rather than incentives are the cause of environmental damage.

We can distinguish between Tragedy of the Commons and upstream/downstream situations by considering the degree to which those concerned about some form of environmental degradation (the 'victims') are also the 'perpetrators' of that damage. Environmental impacts exist on a spectrum in this regard. At one end are Tragedies of the Commons, in which – at least in the stylized case – all relevant actors are both perpetrators *and* victims.

Thus, in Hardin's original example, the problem arises among those placing cattle on the commons and the impacts they have on villagers who might prefer to enjoy the commons for hiking or picnicking are not considered (Hardin, 1968). Because the perpetrators are also victims, they would prefer that the environmental problem be resolved even while they would prefer not to contribute to its resolution.

In 'upstream/downstream' problems, at the other end of the spectrum, none of the victims concerned about the problem have caused it and none of those perpetrating it consider their interests harmed by it. In such situations, the perpetrators remain indifferent as to whether the environmental problem is resolved or not. It is only the victims who seek its resolution. Put differently, actors in Tragedy of the Commons situations are situated symmetrically and have 'mixed motives', wanting to continue to engage in the environmentally-harmful behavior themselves because of the benefits they receive by doing so but also wanting others to stop engaging in that behavior because of the environmental harm it causes. Actors in upstream/downstream problems are situated asymmetrically and have one of two 'pure motives' with respect to resolving a problem, since the perpetrators gain all the benefits but experience none of the costs of their environmentally-harmful behavior while the victims experience all of the costs but receive none of the benefits. River pollution often involves such situations, but air pollution may do the same. And, more importantly, any asymmetric situation in which those concerned about an environmental problem are distinct from those causing it can be referred to as an upstream/downstream problem. Thus, international efforts to protect endangered species, including whales, tigers, and rhinos, are more upstream/downstream problems than Tragedies of the Commons, since many of the 'downstream' states concerned about those species are not involved in their endangerment while many of the 'upstream' states harvesting or failing to protect them are not concerned about their endangerment.

Despite important differences, in both problem types environmental damage emerges because those responsible for the problem lack sufficient incentives to take action to address it effectively. Yet environmental damage, especially in the developing world, often results from incapacity rather than incentive problems. When environmental problems arise from governments *failing* to take certain actions, that is from acts of omission rather than commission, incapacity may lead governments to leave unaddressed problems they would indeed

prefer to see addressed. The discharge of untreated sewage into rivers in many countries occurs because of financial limitations and not because of a lack of concern about its health and environmental impacts. Indeed, sewage treatment is one of the first environmental problems governments address as they develop. Incapacities can be administrative as well as financial. Governmental institutions in states that lack financial and administrative capabilities may be unable effectively to control fishing companies operating from their ports, industries that pollute the air or water from within their borders, or individuals that clear forests to create farmland for their families (Brown Weiss and Jacobson, 1998). Indeed, many developing country governments committed to species and habitat protection, pollution reduction, and other environmental goals can dedicate only the most limited resources to the education and regulation campaigns central to such efforts. Technical incapacities also can generate environmental problems. Thus, although most governments have strong incentives to dispose of nuclear waste safely, nuclear waste disposal is an environmental problem largely because the technology that achieves environmental objectives within economic, political, and social constraints does not exist. It might seem that incapacity issues would generally remain domestic issues. However, issues of incapacity become international when states other than the one involved become concerned about it. Whether motivated by an altruistic concern about the human toll of certain environmental problems, or more instrumental concerns about how those problems have impacts abroad, other 'victim' states may find it worthwhile to help alleviate financial, administrative, or technological incapacities so the 'perpetrator' state can address the environmental problem to the benefit of both the perpetrator and the victim.

Why does this three-part distinction matter? Mixed motive, Tragedies of the Commons, situations are more likely to end up on the international agenda because those perpetrating the problem – at least collectively – have incentives to address the problem, have knowledge about the types and levels of environmentally suspect behaviors, and have the capacity to reduce or eliminate those behaviors. By contrast, pure motive, upstream/downstream, problems come to light only if and when those concerned about some environmental amenity become aware that it is being harmed; only if and when those harms are sufficiently evident and sufficiently large to outweigh the obstacles to mobilizing for action; and only if and when those concerned bring sufficient pressure to bear on the perpetrators to

take action. Incapacity problems tend to enter the international stage when the countries causing the problem bring them up, realizing that other states may have incentives to contribute to ameliorating their own domestic environmental problem. Differences can also influence the design of solutions, since the reciprocal tit-for-tat strategies appropriate to Tragedies of the Commons are either unavailable or ineffective in upstream/ downstream problems (Axelrod, 1984; Mitchell and Keilbach, 2001). In the international fisheries that are so often examples of Tragedies of the Commons, each country's threats to restrain their catch only if others do so can contribute, under the right conditions, to keeping catch levels lower than they would be otherwise. By contrast, in pollution cases, the actions of downstream or downwind states do not influence upstream and upwind states and, therefore, threats by the former to increase their pollution levels make no strategic sense. Incapacity issues also dictate certain types of solutions: threats are obviously non-starters; more capable states must supply the resources the less capable state lacks; but they also must ensure that the recipient state applies the resources for their intended purpose rather than diverting them for other uses.

The strength of incentives

If the distinction among Tragedies of the Commons, upstream/ downstream problems, and incapacity problems sheds light on whether and which states have the incentives to take action on an environmental problem, how strong those incentives are depends on the costs of taking – and of failing to take – action to protect the environment, who bears those costs, and when those costs occur.

The cost magnitude of both action and inaction clearly matters. Environmental problems that impose large costs if unaddressed tend to get addressed before those that impose smaller costs. Likewise, those that are cheaper to address tend to get addressed before those that are more expensive. For people and states who are indifferent to some environmental degradation, this cost magnitude is irrelevant. But those who consider their interests to be harmed by such degradation are more likely to investigate, mobilize against, incur costs to address, and follow through on commitments to avert those problems that entail large costs if left unaddressed.

Environmental problems and their solutions also differ in terms of cost incidence, that is, in terms of who pays the costs of action and inaction. Who the victims of environmental degradation are, at both

the domestic and international levels, influences both how capable and how motivated they are to address the problem. An environmental problem that affects only the United States, Japan, and France will tend to be addressed sooner and more effectively than one with larger impacts on India, Indonesia, and Brazil which, in turn, will tend to be addressed sooner and more effectively than one that devastates small island, developing states like Fiji, Kiribati, and Samoa. 'Who' feels the environmental pain also matters at the domestic level. Environmental degradation that harms major corporations will tend to receive more rapid and complete attention than that which harms the interests of individuals, particularly disenfranchised individuals such as indigenous and tribal peoples. Likewise, the costs of action often fall differentially on different actors. Environmental diplomats spend considerable amounts of their time trying to craft solutions that will distribute costs in ways that all parties will find bearable. Once states recognize the costs to them of environmental inaction, they must then choose among policy alternatives based on the costs to them of action. Costs of action and inaction can also differ in terms of how concentrated they are. The more states that must cooperate to address an environmental problem, the more difficult it is to achieve such cooperation (Olson, 1965; Koremenos et al., 2001). As the number of actors who must cooperate increases, so does the likelihood (and each actor's awareness of that likelihood) of free-riding and shirking by other actors who want the problem resolved but prefer to avoid contributing to its resolution.

Finally, environmental problems exhibit different time sequencing. The resolution of some requires incurring both direct economic costs today and foregone economic growth to reap future environmental rewards. Resolution of others may provide near-term economic co-benefits, for example, in the form of competitive advantages for those who develop environmentally-benign alternatives. The resolution of yet others may entail large up-front costs but may also provide substantial long-term non-environmental returns, as is evident in climate change policies that limit fossil fuel use by restricting oil imports and thereby improve national security or that reduce speed limits and thereby also reduce traffic accidents.

Power and influence

Power can both cause and exacerbate international environmental problems (Victor et al., 1998b: 9ff). International relations scholars often speak of state power as stemming from the control over military or economic resources (Waltz, 1979). A state with more

'systemic' power often can influence the behavior of weaker states in various arenas. States that control significant economic resources can use these to push less powerful states into cleaning up environmental problems without having to make corresponding efforts. The United States, for example, has threatened and used economic sanctions to push various states to reduce their whaling even though, as a state not then engaged in such whaling, it could not exercise a corresponding restraint (Stoett, 1997; DeSombre, 2000). Hegemonic states, when they are concerned about an environmental problem, can foster their speedy resolution (Kindleberger, 1981; Martin, 1992a). Powerful states can also play an important role by taking the lead in support of, or opposition to, international environmental protection. Domestic political pressures have led the United States government to take unilateral action on many international environmental problems, thereby prompting international action (DeSombre, 2000). Groups of states, like the European Union, may have a 'go it alone' power stemming from a coincidence of domestic politics favoring particular policies and the view that those actions, even if they address only part of a problem, make it worthwhile to take action before others do (Gruber, 2000).

States may also have issue-specific power, being able to use their control over environmental resources and the concerns of other states about those resources to give them more influence than a systemic-based assessment of power would predict (Keohane and Nye, 1989). Thus, oil-exporting states are weaker than the United States and European countries in systemic power, but can still exercise considerable issue-specific influence with respect to energy production and consumption. Issue-specific power is evident environmentally in how the relative flows of pollutants between countries alter the incentives of countries to address a problem. Imagine two countries, each with industries that generate $1000 in revenue (benefits) and $1200 of environmental damage, half of which ($600) is transported to the other country, for example, because the upstream state discharges pollutants into a river but is downwind – and hence receives air pollution – from that downstream neighbor. This state of affairs will leads to both states receiving $1000 in economic benefits but $1200 in environmental costs – $600 from its own industry and $600 from its neighbor's. This situation gives both sides incentives to cooperate to address the problem because, if they do not, they will both be worse off. However, those incentives change if one country's industry is only half the size of its neighbor's (generating $500 in revenue and imposing only $300 in environmental damage on its neighbor). The larger country then has

far weaker incentives to address the problem since it receives $1000 in economic benefits and only $900 in environmental costs – $600 from its own industry and $300 from its neighbor's.

Interdependence among states also provides an important source of influence in international relations. The political, economic, informational, cultural, and social linkages that constitute international interdependence provide opportunities for these states concerned about an environmental problem to press other states to understand and address that problem. Scientific and informational linkages can increase the speed with which an international environmental problem is identified. And economic and political ties can provide mechanisms by which concerns in one country can be promoted in other countries. Thus, we might expect faster responses to identical environmental problems among the highly interdependent states of Europe than among the less interdependent states of Asia.

Number of actors

As already noted, the number of actors causing, or potentially contributing to resolving, an environmental problem will influence how readily it can be resolved. Because a larger group of actors finds it more difficult to organize but can be more readily regulated, it matters whether there are a large number of victims, a large number of perpetrators, or both (Olson, 1965; Koremenos et al., 2001). Collective action problems make it more difficult for a large number of victims to mobilize in a coordinated way, reducing the pressure for action (Olson, 1965). These same dynamics imply that if there are relatively few perpetrators, they will find it relatively easy to mobilize to resist international regulation. Notably, however, if regulations are adopted, the smaller the number of perpetrators, the more readily their behaviors can be monitored and sanctioned (Jacobson and Brown Weiss, 1998: 521). The power and visibility of actors also come into play. Multinational corporations have formidable resources with which to resist efforts at environmental protection. But they can also present highly visible, readily identified targets that are often more susceptible to environmental pressures and consumer boycotts 'have bureaucratic structures that enforce control, and they prefer to conduct their activities in stable and uniform regulatory environments' (Jacobson and Brown Weiss, 1998: 521).

Whether actors are considered 'potentially relevant' to an environmental problem will depend on the objective charac-teristics of that problem – how many countries cause the problem and how many are harmed by it – but will also reflect social

perceptions about who the necessary 'players' are and institutional norms regarding which actors to involve. Some problems such as climate change, ozone depletion, and marine pollution tend to be treated as global problems because almost all countries are either the causes of the problem, or are affected by it, or both. Others (like most transboundary river and lake pollution) have a limited number of potentially relevant actors consisting only of the two, three, or four countries that share the river or lake in question. Efforts to regulate international whaling, however, illustrate that which actors are 'potentially relevant' reflects political dynamics and subjective judgments: the initial treatment of international whaling as a Tragedy of the Commons among a few whaling states progressively shifted to its treatment as a moral question about preserving the global resource of whales, a question that made all countries 'potentially relevant' actors whether or not they had ever hunted whales (Mitchell, 1998a).

Domestic political alignments

The power of domestic political actors harmed by or benefiting from efforts to avert environmental degradation also matters. If corporate or nongovernmental actors concerned about environmental degradation are powerful in a state, that state's government is more likely to be pro-environmental as well and, if that government is powerful internationally, then those voices are more likely to be heard then if they were raised by citizens of a less powerful country (Keck and Sikkink, 1998). As debates about environmental racism and environmental justice clarify, however, many forms of environmental degradation impact sub-national actors who are disenfranchised in their own countries and countries that often lack significant international power, and such problems are therefore less likely to be recognized or addressed internationally.

Environmental problems also vary as to whether they generate conflict or cooperation between environmental activists and industry groups. When regulatory strategies pit environmental interests against economic interests at the domestic and international level, they inhibit efforts to address environmental problems (Oye and Maxwell, 1994). But in some situations, regulated firms will benefit from the subsidies, constraints on substitutes, price fixing, or barriers to new rivals that are adopted (Oye and Maxwell, 1994). Regulations that serve the interests of regulated actors can lead firms to join environmentalists in forming powerful 'Baptist-bootlegger coalitions' in support of environmental protection (DeSombre, 1995). When these dynamics emerge in internationally powerful states, they can then create strong pressures for their governments

to internationalize domestic regulations to avoid placing domestic industries at a competitive disadvantage (DeSombre, 2000; Young, 1999a).

Knowledge and uncertainty problems

Environmental problems can be caused or exacerbated by knowledge inadequacies related to the existence and magnitude of a problem, the actions and actors causing a problem, and potential solutions to a problem; inadequacies that can influence agenda setting, negotiations, and the implementation of international environmental agreements.

Many environmental problems initially arise because as humans we are unaware of the environmental impacts of our behaviors. The environmental impacts of most behaviors prior to the twentieth century were unknown, but even today the environmental impacts of new technologies and new behaviors are initially unknown. Often, there is little reason to suspect environmental harm. Chlorofluorocarbons (developed in the 1920s) promised large benefits in refrigeration and insulation and, because they are inert and non-toxic, appeared to pose few health or environmental risks (Nordhaus and Kokkelenberg, 1999: 209). Until Molina and Rowland (1974) proposed a theory linking CFCs to stratospheric ozone loss, human degradation of the ozone layer could be explained as due to an ignorance that CFCs had such impacts. Although such ignorance of environmental impacts is rarely a sole cause of an environmental problem, it is certainly a sufficient condition for such problems – if we don't know our behaviors are harmful, we will make no effort to reduce those harms.

Ignorance and uncertainty are sometimes reduced by scientists investigating theoretically-expected impacts, as with the linkage of CFCs to stratospheric ozone loss and acid rain to forest die-off (Haas, 1992a; Jäger et al., 2001). In other cases, scientists or laypeople may look for the causes of puzzling environmental changes, as in efforts to explain high rates of frog mutations, bee colony collapse, and bat die-offs in the 1990s and 2000s (United States Geological Survey, 2001; Gill, 2007; Minkel, 2007; New York State Department of Environmental Conservation, 2008). Nor does knowledge that certain behaviors damage the environment always go hand in hand with knowledge of the magnitude or extent of that damage. Whether discovered by scientific studies or lay observation, the identification of environmental impacts often begins in delimited locales and it may take decades to assess how widespread a problem is. Indeed, knowledge of the impacts even of suspicious activities may remain

limited for long periods. Thus, any potential impacts of the agricultural application of massive quantities of fertilizer remain understudied and poorly understood (Vitousek et al., 1997).

In turn, how quickly knowledge of a problem spreads, in turn, may depend on how visible, immediate, and attention-grabbing it is. Environmental problems that result from dramatic accidents receive more recognition more quickly than more serious problems that have resulted from ongoing and incremental processes. For these and other reasons, some problems will prompt political mobilization and action more effectively than others.

Environmental problems also vary as regards knowledge about their causes. The greater the uncertainty about a problem's causes, the more challenging it becomes to get that problem addressed. Some problems have known, clear, and un-complex causes. Some behaviors have direct impacts that require little scientific mediation to understand. Most people readily recognize that oil spills cause the deaths of birds, otters, and seals and that excessive harvest of a species will threaten the continuation of traditional rates of harvest. But other problems have uncertain, ambiguous, and quite complex causes. The links between a behavior and its impacts can be numerous and complicated. Environmental problems may result from multiple causes, from interactions among those causes, or from factors whose causal influence is poorly understood or contested by scientists. The complexity of environmental systems, as well as scientific uncertainty and ignorance of those systems, often makes it impossible to make unambiguous claims about what behaviors have caused a the problem or who has engaged in them.

Finally, environmental problems vary as to knowledge about potential solutions. Unless offered alternatives, those engaged in an environmentally-harmful behavior are likely to choose continuing that behavior over abandoning the goals that motivated that behavior in the first place. Available alternatives, by contrast, can allow actors to pursue pre-existing goals through less environmentally-harmful means. The former situation engages conflicts over goals which are typically harder to resolve than conflicts over means (Rittberger and Zürn, 1991). Although the search for solutions will generally start only after a problem and its causes have been identified, certain problems will present far greater challenges to finding such solutions.

Transparency regarding behaviors

Environmental problems vary in the ease with which the behaviors that cause them can be identified. The impacts of some

behaviors are immediate, visible, and clearly-linked to those behaviors. The impacts of others occur decades later, are difficult to observe, and are hard to link to the responsible behaviors. Satellite technology has made it easier to identify deforestation but is not particularly useful at identifying those responsible for it. Marine oil spills are more likely to be detected than marine chemical spills because oil floats. Shipwrecks that spill oil and chemicals become public quickly known because ship owners cannot hide the loss of such valuable assets, but intentional operational discharges of oil and chemicals are difficult to detect both, in aggregate and individually (Mitchell, 1994a). Wetlands can be destroyed by actions that can be immediately and unambiguously linked to a responsible party, as in hotel construction, or by actions that are gradual, hard to detect, and impossible to link to any responsible party, as in dehydration or the pollution from numerous upstream water users. Environmental problems also vary in how attenuated the links are between impacts, responsible behaviors, and responsible parties. Some impacts can be easily linked to both the behaviors causing them and the responsible actors. Others can be linked to the responsible behaviors but not the responsible actors. And still others can result from interactions among many causal factors that cannot be isolated. Thus, nuclear irradiation in Spain in 1966 and Greenland in 1968 clearly were caused by the accidental release of nuclear weapons, with the United States being the only potentially culpable actor (Center for Defense Information, 1981). River or lake pollution due to detergents and sewage or to fertilizers and pesticides can be unambiguously attributed to municipal and agricultural activities, respectively. But recent fish stock declines reflect current and past overfishing, pollution, and climate change, as well as interactions among these factors, making identifying their causes, let alone the responsible parties, all but impossible.

Values and social inertia

How easily people and societies are willing to shift to less environmentally harmful behaviors also influences international environmental politics. The environmental impacts of behaviors that are, and have been, central to everyday life will be more resistant to change than new behaviors in which relatively few people engage. Thus, the relatively rapid response to stratospheric ozone depletion and the much slower response to climate change reflect, in part, how much more central fossil fuels are to existing

economic behavior than are CFCs. As alternatives become available and economically competitive, they can reduce the resistance to efforts to address an environmental problem.

Environmental problems vary in the types of value conflicts they entrain. Some involve differences in the priority different actors give to environmental protection relative to economic or other concerns. In value prioritization conflicts, all sides believe in environmental protection but disagree about what economic costs should be incurred to ensure it. Such conflicts can be challenging to resolve. Other conflicts can arise among those committed to environmental protection due to disagreements about the 'necessary evils' of harmful activities that fulfill 'legitimate' human needs and equally harmful activities that are considered illegitimate. Developing states have sought to frame climate change as caused by necessary and legitimate 'subsistence' emissions and illegitimate luxury emissions (Biermann, 2006b). Indeed, for long periods of time, relevant actors often accept some environmental damage as legitimate if the offsetting benefits to humans are large enough. Conflicts then arise over what constitutes 'large enough'. Thus, efforts to eradicate mosquitoes or viruses that plague humans (but contribute to biological diversity) are relatively uncontroversial. Likewise, wetland drainage, pesticide use, and the killing of animals that prey on livestock have often been treated as non-controversial, with their human benefits considered to outweigh their environmental costs.

However, some environmental conflicts do reveal deeper differences in values, differences over whether environmental protection should reflect a logic of consequences or a logic of appropriateness. In a logic of consequences, people choose actions based on the relative costs and benefits of their alternatives; in a logic of appropriateness, people choose actions based on the moral and social appropriateness, the rightness and wrongness, of their alternatives (March and Olsen, 1998). Environmental conflicts can emerge when relevant actors disagree about whether decisions should be based in the former or latter logic. Thus, the international regulation of whaling since the 1970s has involved a conflict between those who support commercial whaling so long as it does not threaten whale species and others who contend that all killing of whales is wrong, regardless of its environmental impacts (Mitchell, 1998a). Such fundamental value conflicts 'usually defy cooperative conflict management' because they 'leave very little room for compromise' (Rittberger, 1993: 14). In some – though not all – environmental problems, states adopt a logic of appropriateness in which a behavior, once abandoned, becomes inappropriate to

re-adopt, even as a strategic bargaining chip. Therefore, most states consider it legitimate to intentionally and strategically increase their fish catch to 'punish' other countries for exceeding their established international quotas, but would not consider it appropriate to increase their levels of pollution to 'punish' other countries for violating international emission standards.

Distinguishing the Problem Structure of 'Real World' Problems

Two caveats about these distinctions regarding the problem structure of environmental problems are in order. The first is that most international environmental problems reflect combinations of these characteristics. To be sure, some environmental problems can be appropriately characterized as having certain problem structure features. Thus, characterizing international fisheries as Tragedies of the Commons, the pollution of river basins as upstream/ downstream problems, and threats to endangered species in developing states as incapacity problems often captures their most important political characteristics. But trying to pigeon-hole many environmental problems into only one of these categories can seriously mislead with respect to the political dynamics involved. The stratospheric ozone depletion problem and the climate change problem have both Tragedy of the Commons and upstream/ downstream characteristics depending on which set of countries is considered. A Tragedy of the Commons exists among concerned states that also perpetrate the problem, but an upstream/downstream problem exists between those concerned states that contribute relatively little to these problems and the unconcerned ones that contribute much to them. Likewise, current efforts to regulate international whaling involve a Tragedy of the Commons among the whaling states and an upstream/downstream problem between whaling and anti-whaling states. Many current global environmental problems reflect incapacity problems for developing states but incentive problems for developed states. The categories outlined above can help our analysis to the extent that they clarify why environmental politics unfold as they do and, at times, that requires recognizing that a single problem has multiple facets that make it best understood as a 'hybrid' with features of multiple different categories.

The second caveat is that many environmental resources provide multiple ecosystem services (Daily, 1997). When different actors value a single environmental resource differently, their interactions

can exacerbate environmental problems and create political conflict.
One type of resource use can influence significantly the value that
others derive from that resource. The value many Northern
countries and their citizens place on preserving elephants, rhinos,
and tigers conflicts with the value that many Southern countries and
their citizens place on killing individuals of those species for food or
to protect themselves and their livelihood from destruction. The
health of marine fish stocks is increasingly influenced not merely by
catch but by marine and land-based pollution as well as by
escapement and pollution from fish farming. Most international
rivers provide freshwater for drinking and agriculture; habitat for
fish and other freshwater species; electric power; wildlife habitat
and wilderness – and also serve as sinks for municipal, agricultural,
and industrial pollution. We may be able to intellectually and
conceptually compartmentalize such multiple uses and classify one
aspect as a Tragedy of the Commons and another as an
upstream/downstream problem, but in doing so we will miss
important dynamics and interactions among these facets that
complicate such problems but may also offer opportunities for their
resolution.

Conclusion

International environmental problems are 'those impacts on the
natural environment of human activities that some significant set of
people view as negative and that have either a transboundary or
international commons aspect'. This definition is designed to
correspond to standard usage, to distinguish domestic from
international problems, to allow the identification of 'latent' problems
before attempts are made to resolve them, and to recognize that what
constitutes a 'problem' is socially constructed. Both human impacts on
the environment and the recognition of those impacts as problems had
emerged in international affairs at least by the late 1800s. Before the
1950s, international efforts had already begun on the problems of
overfishing and whaling, the threats to birds and various land species,
contagious diseases and invasive plant species, and marine and river
pollution. Since then, the number of environmental problems
considered as international has increased dramatically, with hundreds
of multilateral and environmental agreements being signed to address
them.
   Understanding why these problems emerge on the international
agenda, why states do (or do not) address them, what affects the
responses states adopt to each, and a variety of other crucial questions

requires distinguishing politically-important characteristics that can clarify political similarities across ecologically different problems. Two broad sets of distinctions include those among overappropriation, degradation, and accidental forms of environmental damage, and among Tragedies of the Commons, upstream/downstream problems, and incapacity problems. In addition, environmental problems vary in terms of the strength of states' incentives, their relative power, the number of states involved, the political alignments of domestic actors, the levels of knowledge and uncertainty, the transparency regarding behaviors, and the values that states hold. Each of these categories captures concepts that can help explain differences in the political dynamics around the identification and recognition of international environmental problems, the efforts states make to address them, and the extent to which those efforts lead to successful negotiation and the implementation of an international environmental policy.

The range of characteristics identified here highlights that understanding the politics surrounding a given international environmental problem requires evaluating many different facets of its structure. Knowing that a problem involves overappropriation and not degradation, and that it more closely approximates a Tragedy of the Commons than an upstream/downstream problem, provides a place to start in analyzing when problems will be identified, addressed, and successfully implemented and not a place to stop. Incentives play an important role in defining a problem's structure but so do power, knowledge, transparency, and values. For any given problem, some of these facets may make resolution easier while others may make it harder. Fully understanding and answering the questions raised by subsequent chapters requires that we recognize how the various facets of a problem's structure contribute to or inhibit the political processes surrounding that problem's recognition and resolution.