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Introduction

Governing the Global Environment

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Humans change their environments. Environmental change is driven by the things we eat, build, make, buy, and throw away—and by the decisions we make as citizens and voters. Over the past few decades we have acquired the power to change the planet's climate. The early twenty-first century finds the Earth's physical and biological systems under unprecedented strain. The growing human population exceeds seven billion, and the global economy has grown to more than $70 trillion annually. The United Nations estimates that one-third of the world's people live in countries with moderate to high shortages of fresh water. Many of the world's largest cities are choked by pollution. As carbon dioxide and other greenhouse gases build in the atmosphere, the average surface temperature of the Earth has reached the highest level ever recorded, measured on an annual basis, as glaciers and polar ice recede. The biological diversity of the planet is also under heavy stress. Scientists believe that a mass extinction of plants and animals is under way and predict that a quarter of all species could be pushed to extinction by 2050 as a consequence of global warming alone. Without question, human impacts on the biosphere will remain one of the most critical issues of the century.

Scientists and conservationists have recognized the threats to the Earth's flora and fauna, water systems, and atmosphere for more than a century, but only in the past four decades have nations begun to address these issues on a global scale. The 1972 United Nations Conference on the Human Environment (UNCHE) in Stockholm, Sweden, attended by 113 states, marked the beginning of organized international efforts to devise a comprehensive agenda to safeguard the environment while also promoting economic development. Although no binding treaties were adopted at Stockholm, the conference established the United Nations Environment Programme (UNEP), creating a permanent forum for monitoring global environmental trends, convening international meetings and conferences, and negotiating international agreements. Among UNEP's most important achievements are the 1985 Vienna Convention for the Protection of the Ozone Layer and the binding 1987 Montreal Protocol on Substances That Deplete the Ozone Layer.[1] In 1987 the World Commission on Environment and Development (WCED, also known as the Brundtland Commission for its chair, former

Norwegian prime minister Gro Harlem Brundtland) issued its historic report *Our Common Future,* which called for a new era of "sustainable development."[2] To begin implementing this strategy, the United Nations Conference on Environment and Development (UNCED), known as the Earth Summit, was convened in Rio de Janeiro, Brazil, in June 1992. The conference produced major international treaties on climate change and biodiversity, two declarations of principle, and a lengthy action program (Agenda 21) for implementing sustainable development around the world. Ten years later, in August 2002, 191 nations attended the World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa, to reassess and renew commitments to sustainable development.[3] Another ten years found public, private, and civil society actors returning to Rio for the United Nations Conference on Sustainable Development, or Rio+20.

As a result of such diplomatic achievements and the politics, policy making, and activism that surround them, a system for global environmental governance now exists. This system consists of states and hundreds of intergovernmental organizations such as the United Nations and UNEP (and dozens of issue-specific organizations set up by treaty) and thousands of nongovernmental organizations (NGOs) (see Chapter 2), a framework of international environmental law based on several hundred multilateral treaties and agreements (see Chapter 3), and a diverse host of complex international cooperation regimes and other governance arrangements (see Chapter 4).

Hundreds of bilateral and regional treaties and organizations, such as those involving the United Nations Regional Seas Programme and the European Union (see Chapter 7), deal with dozens of transboundary and shared resource issues. By one count, 1,190 multilateral international agreements (MEAs) and more than 1,500 bilateral environmental agreements are currently in effect.[4] Some date back to the nineteenth century, while some were created as recently as 2013, when the Minamata Convention on Mercury was signed in Japan.

Particularly since the 1990s, a host of nongovernmental organizations, including international environmental interest groups, scientific bodies, business and trade associations, women's groups, and indigenous peoples' organizations, have also come to play an important role in international environmental governance (see Chapter 2). Environmental activists and NGOs (small and large) can now be found all around the globe, engaged in politics and social action and organizing from neighborhoods and local communities to national and global politics.[5] These organizations participate in international negotiations, help to monitor treaty compliance, and often play leading roles in implementing policies. At the 2002 Johannesburg summit, more than twenty thousand individuals registered as participants, and countless others attended the parallel Global People's Forum and summit of indigenous peoples.[6] The increased access to and transparency of international environmental governance is one of the most remarkable achievements of the emerging global environmental governance system.

Despite these strides, there is a growing perception that the current international governance system remains weak and ineffective.[7] Many international environmental institutions lack adequate funding and effective enforcement mechanisms. Because no world government or global sovereign political authority exists, international agencies often work at cross-purposes and rely on individual states to carry out their policies. States are reluctant to relinquish their sovereignty and their right to pursue their own national interests. Consequently, many trends and patterns of global environmental degradation have not been reversed, leaving us on a path toward devastating ecological crises unless global institutions are strengthened and public, private-sector, and civil society actors—and individual citizens and consumers—take on far more responsibility for environmental governance.

The role of the United States in international environmental diplomacy has been especially disappointing in recent years. Although the Clinton administration signed the 1997 Kyoto Protocol, which set targets and timetables for reducing greenhouse gas emissions that cause global warming, neither this treaty nor others, such as the Convention on Biological Diversity, the Basel Convention on the trade in hazardous wastes, and agreements covering biosafety and a host of transboundary air pollutants, have been ratified by the U.S. Senate. President George W. Bush repudiated the Kyoto Protocol in 2001 and showed little interest in other multilateral environmental agreements and institutions. U.S. support for many international environmental programs has declined over time. This indifference often results in deep divisions between the United States and both the European Union and the developing nations of the global South (see Chapters 6, 7, 9, 10, and 12).[8] Yet even here the picture is more complex than it might seem at first glance. Although the U.S. federal government largely abandoned environmental policy development in the early years of this century, many U.S. states and cities continued to make policy in response to international environmental challenges. Many states, for example, enacted policies to combat climate change and expand renewable energy generation even when the federal government was opposed to doing so.[9] In 2009, the Obama administration arrived in Washington, D.C., pledging to return to domestic environmental policy making and to steer the United States toward reengagement in global environmental cooperation (and in other areas of multilateral politics). Such changes take time and require the support of Congress and the American people. Congress has repeatedly opposed environmental initiatives—ignoring calls to act to reduce greenhouse gas emissions, to set clear regulations for hydraulic fracturing (fracking) and natural gas extraction, and to enact serious energy efficiency regulation—and has struggled to sustain even modest support for renewable energy generation. While a reelected President Obama pledged to lead on climate change and other environmental issues in both domestic and global politics, his administration's ability to do so remains constrained by congressional inaction and opposition. In 2013, attempting to circumvent congressional hostility toward climate policy, President Obama initiated a series of executive actions and EPA-driven regulatory processes, engendering ongoing opposition.

This book presents an overview of the development of international environmental institutions, laws, and policies and attempts to assess their adequacy. The authors analyze developments since World War II, with an emphasis on trends since the 1992 Earth Summit in Rio. They share both an optimism that people and nations can work together to address global problems and growing concern and pessimism about trends in both global environmental degradation and governance in the past two decades. They also take a longer view in evaluating emerging environmental regimes, because global cooperation is difficult to establish and sustain. Most of the contributors to this volume argue that there are important lessons to learn and reasons for hope. They caution, however, that more serious attention to global environmental governance is required of citizens and governments alike if disturbing and dangerous trends are to be reversed.

The past forty-plus years have seen dramatic and often surprising political and economic changes from which this volume seeks to learn. In addition to the large global summits on the environment and sustainable human development, the past twenty-five years witnessed developments such as the end of apartheid in South Africa, the collapse of Soviet-style communism in Eastern Europe and across the Soviet Union, a host of other transitions to democratic rule in Latin America and elsewhere, and the recent dramatic social and political changes across parts of North Africa and the Middle East. These changes brought unprecedented growth in the number of democracies in the world. The same era witnessed deepening European integration and expansion of the European Union from twelve countries to twenty-eight member states (with more applicants negotiating entry). China, India, Brazil, and a few other developing countries have roared into the global economy, reshaping aspects of their domestic politics, international relations, and global resource and environmental trends. These developments can both affect and inspire global environmental governance. For example, many of these political and economic changes help drive ever-increasing use of the Earth's resources (along with the seemingly never-ending growth in North American–style consumption). Yet if Europeans can overcome generations of war to build a unified Europe and citizens living under nondemocratic governments can demand their democratic and basic human rights and replace dictators with elected officials, then it may be possible for humankind to reverse global environmental degradation and build effective global environmental governance institutions to engender sustainable development around the globe.

The next two sections of this chapter provide a brief overview of the theoretical context for studying international environmental governance. The first of these summarizes the most important perspectives from international relations theory relevant to the emergence of international environmental institutions and law. The second discusses the concept of sustainable development, which became the dominant ideological framework for global environmental policies in the 1990s. The third section below outlines the organization and contents of the book, briefly discussing each of the three parts: (I) international environmental actors and institutions; (II) big players in global

environmental policy making; and (III) cases, controversies, and challenges in global environmental governance. A short conclusion summarizes some of the themes of the book.

International Relations, Regimes, and Governance

International politics and governance institutions associated with environmental and sustainable development issues have produced a large and growing body of social science research and analysis.[10] Similarly, a large body of international relations theory is applicable to the development of international environmental institutions and agreements (see Chapter 4).[11] The study of international relations has traditionally been dominated by two broad theoretical schools: realism and liberalism. "Realists" view the world as an anarchic collection of sovereign nation-states, each of which is a unitary actor in pursuing its unique national interests. These interests are largely defined in terms of relative power and security compared with other states. In this perspective, nation-states do not cooperate with one another unless it is clearly in their self-interest to do so, and cooperative behavior will continue only as long as the parties perceive this condition to be met. International laws and institutions are thus essentially instruments for promoting or defending national interests and have little or no independent effect on the behavior of nations. Indeed, such laws and institutions can usually function only if strong or hegemonic states maintain them and enforce their decisions against weaker members or other states. The potential for international cooperation is therefore quite limited, and international laws and institutions are likely to be fragile and impermanent.[12]

This anarchic, state-centered perspective has been increasingly challenged in recent decades by a variety of "liberals," "neoliberals," and "liberal institutionalists." While most of these theorists concede that states are the primary actors on the international level, they hold that the traditional view of state sovereignty and unitary interest cannot explain the steady growth of international cooperation or the persistence of many specialized international institutions in the contemporary world. Although there are many strands of thinking, most liberal theorists hold that states are interdependent and, in fact, have many common interests that lead them to cooperate; moreover, they believe that international institutions not only serve these common interests but also create further incentives for cooperation.[13] In other words, institutions matter, and they influence the preferences and behavior of states by allowing states to improve collective welfare outcomes by cooperating. Whereas realists focus on *relative* status gains (especially regarding military security), liberals tend to emphasize *absolute* benefits (especially mutual economic gains) made possible by international agreements and institutions that solve collective action problems.

Over the past generation, a third, broad theoretical perspective has joined realism and liberalism in the pantheon of common theoretical approaches to understanding global environmental politics: constructivism.[14] Constructivism

focuses attention on the influence of ideas, collective values, identities, and norms in international politics. The name given to this perspective refers to the argument that social reality is "constructed" through social interaction—that humans, collectively, construct the world in which they live through their identities and debates about values and norms (about what is justified or appropriate). Because of constructivism's attention to the influence of ideas and values, some international relations theorists view it as the contemporary variant of idealism.[15] For constructivists, international cooperation is more than mere ad hoc coalitions or a reflection of shared interests. It reflects who the participants are (or believe they are), and it can shape how they see themselves over time and what they view as appropriate. In other words, cooperation has the potential to be transformative in constructivism. For example, political scientist Peter Haas argues that a constructivist understanding of the effectiveness or impacts of conferences like the global environmental and sustainable development summits in 1972, 1992, 2002, and 2012 focuses more on how such meetings shape actor understandings, raise awareness, and bring political actors to agreement on norms, values, and ideas (on which they may act later).[16]

In other words, global environmental politics both reveals and shapes emerging, collectively held consensus positions and norms—about policies, problems, and how we understand the global environment and our place in it (and the place of international politics). For example, constructivists might examine scientific and policy debates around climate change to understand how some actors reach consensus or agreement while others continue to question widely held views or understandings. They might also explore the role and use of language and discourse in such debates.

Building on these three approaches to international relations theory during the past two decades, many environmental policy scholars have turned to the concept of regimes. International environmental regimes are composed of the international treaties and agreements, intergovernmental organizations, binding and nonbinding norms and principles, relevant national and local government institutions, and associated nongovernmental and private institutions that define and implement policies in different issue areas, such as climate change, maritime oil pollution, and endangered species protection. In Chapter 4 of this volume, David Leonard Downie explains regime theory in more detail and discusses many prominent examples of international environmental regimes. Drawing on other strands of international relations theory and systems theory, he also analyzes the obstacles to effective international cooperation. His chapter thus reveals the real difficulties of achieving effective international environmental policies.

Some theorists are more optimistic about the potential for a global governance system comprising an increasingly dense and interactive network of international regimes.[17] "Governance" in this sense does not presuppose a central government; rather, that coordination of action can occur through many different institutions, including private social and economic systems and nongovernmental organizations, as well as a variety of governmental institutions at different levels. This concept often presupposes some kind of

global "civil society" or decentralized network of autonomous social institutions that represent citizens and organized interests and engage in cooperative actions to achieve broad goals such as sustainable development. Increased communication and exchange of information among individuals and groups around the world through the Internet and other means can magnify the impact of such civic action to the point where common ideas and values begin to influence the actions of governments from the bottom up.[18] Recent work within the "governance turn" in global environmental politics scholarship has begun to catalog and analyze large numbers of transnational or regional governance initiatives—or experiments—around the world involving complex sets of public, private, and civil society actors and a diverse set of institutionalized relationships and environmental goals.[19]

This brief discussion highlights the fact that whatever one's basic theoretical perspective, the development of international environmental cooperation has become one of the most fruitful and dynamic fields of international relations. Although there is no consensus among scholars on the nature of the world system or the autonomy and durability of current international environmental institutions, laws, and policies, it is undeniable that the global environment has become a principal concern of political actors as well as scholars around the world. From this broader vantage point, the halting and confused human response to gathering evidence of potential ecological catastrophe may be less discouraging than short-term observations suggest.

Sustainable Development

Cutting across theoretical disputes are the realities of world economic and social development. Environmental threats are the products not only of individual actions; they are also deeply embedded in our cultural, economic, political, and social systems. Perhaps the most obvious realities are that these systems are highly fragmented and differentiated and that global economic development is grossly uneven. The gap between the world's richer and poorer states is enormous and growing. So, for example, while gross domestic product per capita in the United States is more than $46,000, about a billion people, concentrated mostly in the world's fifty poorest countries, live on less than one dollar per day. These differences among nations at various stages and levels of development have profound implications for the global environment. Recognized since the Stockholm Conference is the fact that the needs and agendas of developed nations ("the North") are often fundamentally different from those of developing countries ("the South"); thus it is difficult to reach consensus on international policies that benefit all parties (see Chapter 9). Essentially, while the North gives substantial political attention to environmental issues that threaten ecological stability, the South has placed greater emphasis on immediate needs for economic growth to raise standards of living. Indeed, developing countries at the Stockholm Conference feared that environmental protection was a plot by the North to limit their development—a concern that still echoes through all international negotiations.[20]

The North-South division raises fundamental issues of international equity.[21] Developing countries (rightly) argue that the developed countries have benefited from environmental exploitation in the past and are responsible for most of the world's pollution and resource depletion, including that leading to ozone depletion and climate change. Thus, the argument goes, it should be primarily their responsibility to deal with these problems. Furthermore, developing countries are not willing to foreclose opportunities for economic growth that would permanently lock them into poverty and dependence while the peoples of the North engage in profligate consumption. Representatives of developing countries (organized as the Group of 77 in the United Nations since 1964 but now actually including more than 130 states) thus usually condition their willingness to participate in international environmental treaties and agreements on concessions from the North, such as guarantees of special funding and transfer of technologies to enable them to reduce their impact on the environment while increasing economic growth.

Another fundamental dimension of global environmental protection concerns intertemporal, or intergenerational, equity. That is, policies must consider the needs of both the present generation and the future. Edith Brown Weiss defines three essential principles: (1) each generation should be required to conserve the diversity of the resource base so that it does not unduly restrict the options available to future generations; (2) each generation should maintain the planet's overall quality so that it is bequeathed in no worse condition than it was received; and (3) members of every generation should have comparable rights of access to the legacy of past generations and should conserve this access for future generations.[22] The third principle implies a degree of intragenerational equity as a condition for intergenerational equity; that is, no group should either be denied a right to present environmental resources or be asked to bear a disproportionate share of environmental burdens (a principle often referred to as *environmental justice*).

The concept of sustainable development was born of these concerns. First set out by Dennis Pirages in 1977 in *The Sustainable Society* and in *World Conservation Strategy,* published by the International Union for Conservation of Nature (IUCN) with the World Wildlife Fund (WWF, now the World Wide Fund for Nature) and UNEP in 1980, the concept was popularized in the Brundtland Commission report of 1987. The famous definition of sustainable development comes from this report: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This is followed immediately by the explication of two key concepts embedded within the definition: "the concept of 'needs,' in particular the essential needs of the world's poor, to which overriding priority should be given"; and "the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."[23]

Several elements in this definition are critical for an understanding of sustainable development. First, the concept clearly represents an attempt to bridge the concerns and interests of developed and developing nations, but it

applies to both. That is, both the wealthiest and the less developed countries will need to change their production and consumption patterns. Second, it attempts to reconcile economic growth and environmental protection, not view them as trade-offs. Third, the concept is strongly anthropocentric. It starts from the premise that human needs must be met before a state can address environmental problems. Thus improvement in the living conditions in poor countries, and especially those of women and marginal social and economic groups, is an essential precondition for ecological preservation. Fourth, the limits to growth are not ultimately physical or biological but social and technological; it is assumed that environmental problems can be solved. Finally, the concept is extremely general, lacking specific content on how sustainable development is to be attained or who is responsible for achieving it. This vagueness is deliberate: it allows the idea to be adopted by virtually everyone as a way of bringing people together to seek common ground. In this formulation it is clearly a political and social construct, not a scientific concept or blueprint.[24]

Sustainability is now a ubiquitous term used by governments, the business sector, NGOs, and international organizations. It has become difficult to assess sustainability paradigms or initiatives and to separate serious and potentially transformative ones from "greenwashing" in which the term is used as meaningless jargon for corporate branding.[25] Whatever the conceptual and ideological differences below the surface, there have been numerous attempts to translate sustainable development into policy initiatives. The most important political effort to do so occurred at the UN Conference on Environment and Development in 1992 in Rio de Janeiro. UNCED produced both a general declaration of principles (the Rio Declaration on Environment and Development) and Agenda 21, a massive effort to define strategies and policies for implementing sustainable development. Governments pledged to formulate sustainable development plans and programs, and the Commission on Sustainable Development was established by the UN General Assembly to monitor these commitments. Many regional, national, and local organizations have adopted the principles and goals of sustainable development since 1992. Organizations such as UNEP, the IUCN–World Conservation Union, the World Bank, the Organization for Economic Cooperation and Development, and the U.S. National Academy of Sciences have also been actively working to identify specific empirical "indicators" for measuring progress toward sustainable development.[26]

Despite such efforts, there is a general sense of disappointment, if not despair, regarding implementation of Agenda 21 in the twenty years since the Rio summit. For example, international aid flows for sustainable development have failed to come close to the levels considered necessary; indeed, official development assistance has *declined* in absolute terms.[27] A sense of pessimism pervaded both the 2002 World Summit on Sustainable Development in Johannesburg and Rio+20 in 2012. The WSSD attempted to focus on implementing existing obligations rather than on launching new programs, although some new policy goals, financial commitments, and public-private

partnerships were agreed upon. Like most global summits, Rio+20 produced debate about its value, accomplishments, and underlying values and assumptions.[28] At best, one can characterize its accomplishments as modest and its results as mixed. Little sign of the political will and urgency suggested by environmental trends and environmental science was on evidence in the actual commitments made by states. Nothing illustrates this more than the disappointing outcomes of ongoing global climate change cooperation efforts such as the Kyoto Protocol, which expired in 2012 with no serious global agreements to replace it as global greenhouse emissions of all kinds continue to rise.

Overview of the Book

This book's individual contributions are organized into three sections, the themes, concepts, and topics of which are summarized below.

International Environmental Actors and Institutions

International environmental organizations take many forms. Some of the oldest, such as treaties to protect intercontinental migratory bird species, European river basin commissions, and the International Joint Commission formed by the United States and Canada in 1909 to preserve the Great Lakes, are bilateral or multilateral institutions created to encourage cooperation in managing shared resources. Some, like the International Whaling Commission (IWC) and the International Tropical Timber Organization (ITTO), concern the worldwide harvesting and trade of specific categories of living resources, while others protect "common-pool resources," such as Antarctica and the high seas, that are beyond national jurisdictions. The environmental impacts and effectiveness of such cooperation arrangements also vary widely—as in most areas of public policy. So, for example, the fractious and controversial IWC has clearly helped to curtail whaling around the world even if some few states have opted out, while the ITTO has had little discernible impact on deforestation trends. The International Maritime Organization regulates shipping to reduce pollution as a result of both normal operations and accidents, slowly changing shipping standards and practices over decades. Still others, like the World Meteorological Organization and the Intergovernmental Panel on Climate Change (IPCC), conduct scientific research, monitor environmental change, and/or assess ongoing scientific and technical research on a global scale. Finally, many are essentially ad hoc organizations, such as the secretariats and conferences of the parties (COPs) that are created to monitor and develop detailed protocols to treaties and conventions.

Most of these international bodies are *intergovernmental organizations* (IGOs), meaning that they are created by member states and are accountable to them. In most cases member states are formally equal in governing (though not in financing) these institutions, but some (notably the World Bank and

the International Monetary Fund) use weighted voting procedures that reflect donor contributions. This has become a contentious issue in negotiations over multilateral funding mechanisms to channel special economic assistance to the South. The Global Environment Facility (GEF), which provides funding primarily for implementation of the climate change and biodiversity conventions in developing countries, was restructured after 1992 to give recipient countries more influence in financial decisions.

In Chapter 2, Kate O'Neill examines both the evolution of global institutions since the 1972 Stockholm era and the increasingly important role that *nongovernmental organizations* play in global environmental politics on local, national, and international levels. The United Nations General Assembly has been key in establishing the scope of environmental problems, principles of international law, and the United Nations Environment Programme, a major international environmental institution. O'Neill traces the development of "Earth summits" and their accomplishments and limits. These state-led international regimes, with UN support, have had significant successes, but as performance demonstrates, although UNEP can respond quickly and engage in long-term monitoring, results can be limited because of inadequate resources and lack of political will. O'Neill explains the roles of crosscutting intergovernmental organizations such as the World Trade Organization (WTO), the IPCC, the GEF, and the World Bank, which establish networks to promote solutions to environmental problems. NGOs have increased in number and significance in recent years, and they are quite diverse in their aims, forms, and structures. Ranging from local activists to professional organizations, they set international agendas, transcend state boundaries, work in partnership with the corporate sector and states, and participate directly in international environmental regimes. It is now a matter of debate whether IGOs and NGOs can successfully supplant states as major actors in global environmental policy, given issues of legitimacy and representativeness. O'Neill explores the breadth and scope of the many international environmental actors operating on multiple levels of governance and the increase in the numbers of international environmental agreements in which states, IGOs, and NGOs interact.

Jacqueline Peel provides a history of the development of international environmental law and its most important principles in Chapter 3. Before the establishment of the United Nations in 1945, there was no international forum in which to raise international environmental issues. Although the UN Charter does not explicitly mention the environment or conservation of resources, the United Nations convened its first environmental conference in 1949 and hosted many negotiations prior to the Stockholm Conference in 1972. Most existing environmental treaties were signed between 1972 and 1992, and recent decisions of the International Court of Justice confirm that the environment is now considered within the mainstream of international law. Peel explains the sources of international law, the roles of different actors in formulating and implementing it, and the most important emerging principles of environmental law. She outlines the development of international

legal standards in six broad fields: protection of biodiversity, the marine environment, freshwater resources, air quality and climate change, waste management, and hazardous substances. Finally, she concludes that implementation and enforcement of this body of international law will be the most critical issue in the next phase of its development, suggesting that both international courts and nonjudicial bodies such as tribunals of the World Trade Organization are playing stronger roles than they have in the past.

In Chapter 4, David Leonard Downie analyzes the nature of international environmental policy regimes. Building on previous scholarship, he defines such a regime as "a system of principles, norms, rules, operating procedures, and institutions that actors create or accept to regulate and coordinate action in a particular issue area of international relations." He explains these terms in detail, often using as a generally successful and effective example the global regime to protect the ozone layer. He briefly outlines the structure of several other environmental regimes before discussing a wide range of political, economic, procedural, scientific, and cultural factors that can undermine the effectiveness of regimes and make international cooperation difficult. While not denying the success of some existing regimes, Downie's chapter casts a cold eye of realism on the strategic difficulties in achieving effective international policy, helping to explain the wide variance in effectiveness on display in global environmental governance.

The final chapter in Part I, by Michael G. Faure and Jürgen Lefevere, focuses on the broad problem of improving compliance with international environmental agreements.[29] The authors distinguish among treaty compliance, implementation, enforcement, and effectiveness. *Compliance* refers to the extent to which the behavior of states conforms to the rules set out in a treaty, whereas *implementation* involves specific actions taken by states within their own legal systems to make a treaty operative; *enforcement* denotes measures to force state compliance and implementation, and *effectiveness* focuses on whether the objectives of the treaty are actually achieved. Compliance does not guarantee effectiveness but is usually a necessary condition unless the treaty itself is so weak that compliance requires no changes in behavior. Throughout Chapter 5, Faure and Lefevere present examples from the global climate change and ozone layer regimes to illustrate the concepts and the challenges associated with compliance.

Traditionally, international agreements have included some dispute settlement procedures or other provisions for invoking legal, economic, or political sanctions against noncompliant parties, but in practice such sanctions have rarely been enforced and are seldom effective in achieving treaty objectives. Faure and Lefevere discuss the many factors that can affect rates of compliance, including the number of parties involved, the capacities of national governments, the strength of NGOs, and the nature of the substantive provisions (primary rules) written into the treaties themselves. They show how there has been a shift from the traditional enforcement approach to a "managerial" or "facilitative" approach in some recent environmental agreements such as the Montreal Protocol on ozone-depleting substances and the Kyoto

Protocol on climate change. These new "comprehensive noncompliance response systems" attempt to induce compliance through information and advice, technical assistance, and other incentives rather than by invoking negative sanctions. Nonadversarial approaches—successful in some cases—seem to be gaining in popularity, but the general effectiveness of these methods will be tested as international environmental law and governance shift toward a greater focus on compliance and implementation.

Big Players in Global Environmental Policy Making

Because the concept of sustainable development is broad and has quite different meanings when translated into different cultures and languages, it is difficult to evaluate national policies in terms of specific criteria or indicators of sustainability.[30] Some nations, such as New Zealand and the Netherlands, have adopted far-reaching sustainable development plans and programs, whereas others have dealt with sustainability issues in a piecemeal and ad hoc fashion, if at all.[31] But apart from rhetorical justification of selected measures under the sustainable development label, many policies and projects at the national and local levels do, in fact, have major implications for sustainability. Decisions about energy supply or land use within a given country can have impacts on other nations or the entire global system; this is especially true of very large nations such as China, Brazil, and the United States, and of the European Union. Major projects within countries (even small states) also attract capital and technical support from international banks and corporations, thus involving the international community in what may appear to be local developments. Such linkages between national politics and international action are essential components of global environmental policies and governance.[32]

Among developed nations, the United States has been among the most resistant to the idea of sustainable development and to ratification of multilateral environmental agreements in the past two decades.[33] Although the leader in establishing many of the environmental treaties through the 1980s (including the Montreal Protocol), the United States has generally been an international laggard since the first Bush administration, often becoming openly hostile to multilateral institutions and policies during the George W. Bush administration. American policy sometimes reflected a shift to conservative majorities in the U.S. Congress between 1995 and 2007, making it virtually impossible to ratify any environmental treaties. Although Democratic majorities in Congress briefly ushered in greater attention to environmental issues and regulation, by late 2013 deeply divided Congresses remained unable to change the poor record of U.S. environmental treaty ratification. Thus the United States has not ratified (and is not a party to) the Convention on Biological Diversity and its Biosafety Protocol, the Kyoto Protocol, the Law of the Sea, or the Basel Convention—to name just a few. American avoidance of certain kinds of international environmental agreements predates (and may outlast) the era of conservative ascendancy, requiring a deeper analysis of U.S. behavior.

In Chapter 6, Elizabeth R. DeSombre explores a wide range of hypotheses as to why the United States has initiated or supported some multilateral environmental agreements and opposed others over the past several decades. In particular, why has the United States taken a unilateral course on such major issues as climate change, biodiversity, trade in hazardous wastes, and the law of the sea? In search of a consistent causal explanation, DeSombre examines these cases as well as others in which the United States has preferred a cooperative approach, such as on combating ozone layer depletion and protecting endangered species. After determining that most conventional explanations concerning American culture and ideology, scientific uncertainty, relative vulnerability to harm, and the projected costs of regulation fail to explain all cases, she suggests a more nuanced explanation that focuses on certain aspects of U.S. domestic politics. In general, the United States supports international agreements when it already has enacted domestic regulations in the same areas and opposes international controls that go beyond domestic regulation or would be difficult to implement in the U.S. system. This pattern can in turn be explained by institutional peculiarities of the American system, especially the unique role that Congress plays in shaping foreign policy. DeSombre and others have noted that the Senate, especially, tends to be responsive to domestic business and industry pressures seeking to block international regulation. This pattern may change over time, however, as some major firms and industrial sectors come to favor action on climate change and other issues and because international institutions may, over time, shape the preferences of U.S. domestic actors.

In contrast with the United States, the European Union has increasingly taken the lead—or attempted to lead—domestically and internationally in numerous areas of environmental policy. In Chapter 7, Regina S. Axelrod and Miranda A. Schreurs explain how the European integration process and its evolving institutional structure contribute to this leadership role. Although the Treaty of Rome, which established the European Economic Community (EEC) in 1957, made no mention of environmental policy, beginning in 1972 the EEC adopted a series of environmental action programs and enacted numerous specific environmental laws as a way of harmonizing economic policies. Since 1986 several major treaty revisions have strengthened the legal capacity of the EEC to legislate in the field of environmental protection. The Maastricht Treaty of 1992 transformed the European Economic Community into the broader European Union, which has since grown from twelve to twenty-eight states. The EU has also explicitly incorporated the goal of sustainable development into the treaty and has taken an increasingly active role in international environmental diplomacy on matters such as climate change. In a number of environmental policy areas, EU and U.S. federal policy making has often diverged on global environmental issues during the past fifteen-plus years.[34] The EU has enacted a large set of innovative and ambitious environmental policies over the past twenty years on a wide range of issues—several opposed by U.S. government and corporate actors. This growth, however, has also increased the implementation challenges in both

the newer EU member states and longtime member states, presenting the EU with compliance and implementation challenges at home and occasionally threatening its global environmental leadership position.[35]

Axelrod and Schreurs describe the structure and evolution of the EU in detail and analyze policy developments since 1992. Although the European Union is still an intergovernmental organization in the sense that decisions must ultimately be approved by member states, in practice it functions as a supranational governance system in which most policies are adopted by majority voting in the council and the parliament. Moreover, the composition of EU officials and member state representatives can change according to the subject at issue, including environment ministers and technocrats, for example, when the EU considers environmental legislation. As a result, EU environmental policies have been less subject to opposition group pressure than have such policies in the United States. At the same time, EU treaties require integration of environmental policy into other policy sectors in order to promote sustainable development. Several new, innovative policies that go beyond measures in the United States are discussed in the chapter. Yet, as Axelrod and Schreurs make clear, the EU faces major hurdles in implementing sustainable development policies and in adapting governance structures and policy standards to both old and new member states.[36]

In Chapter 8, Joanna I. Lewis and Kelly Sims Gallagher address energy, environmental, and sustainability issues in a large and rapidly developing country: China. They present a wealth of data on China's energy resources, trends, and use, as well as on its transportation and electricity generation infrastructure. They also analyze the political institutions that shape energy issues in China. As Lewis and Gallagher show, providing energy for 1.3 billion people and a growing and modernizing economy in an environmentally sensitive and sustainable manner is an enormous, unprecedented challenge. The environmental and social costs of China's energy and transportation infrastructure are huge. Yet the Chinese central government has demonstrated growing concern about environmental issues and growing interest in serious environmental policy reform and investments in renewable energy generation and air and water quality improvements. The costs of moving China away from coal are enormous, as is the challenge of implementing new environmental standards at the local level. Yet China's automobile efficiency standards are as high as or higher than those in the United States, and its investments in wind and solar power have made it a world leader in only a few years in terms of installed capacity and industrial production. Lewis and Gallagher make it clear that China faces enormous obstacles in transitioning to a more sustainable society, but they also demonstrate that China's environmental politics and regulation are changing rapidly as concern has grown among publics and state leaders.

Chapter 9 shifts the focus to the developing world, or the Global South, more broadly. Adil Najam argues that the South has a well-developed collective identity and sense of purpose dating back to the Stockholm Conference on the Human Environment and the quest for a "new international economic

order" in the 1970s. This unity is manifest primarily in the Group of 77 (G-77) bloc in the United Nations, now consisting of some 134 developing countries. Najam explains how preparations for the 1992 UNCED in Rio offered the South an opportunity to revive the North-South dialogue around the theme of sustainable development, and how subsequent UN global summits have offered opportunities to advance the overarching economic and political agendas of the South as well as created disappointment and frustration regarding many results in such global forums. From the South's perspective, the Rio conference provided a high point in its ability to shape the international agenda. Although most of the South's demands were not met, UNCED did link the economic development goals of the South to the environmental agenda of the North, and it established several important new principles of international environmental law, such as the principle of common but differentiated responsibility. Nevertheless, in looking back at the two decades between Rio and Rio+20, Najam concludes that these principles and the "Rio bargain" on sustainable development have been largely abandoned at the global level, leading to widespread disillusionment among developing countries.

Cases, Controversies, and Challenges

The range of international environmental policies currently in force is vast, covering, among other things, protection of endangered plants and animals and biodiversity, broadly; protection against transboundary pollution of air, water, and soil; protection of the atmosphere against acidification, ozone depletion, and climate change; protection of the oceans against oil spills and the dumping of radioactive and other hazardous materials; conservation of fisheries; regulation of trade in dangerous chemicals, pesticides, and hazardous wastes; measures to combat desertification; and protection of Antarctica. In addition, new policies are emerging for consideration of environmental protection under the rules of international trade and for promoting sustainable development initiatives pursuant to Agenda 21.

Policies may take the form of binding treaties or secondary legislation, or they may take the form of policy declarations or voluntary programs to achieve certain results. They usually require implementation by actors at many levels, including businesses, local governments, and grassroots organizations as well as national governments. Evaluation of the *effectiveness* of policies is complex, in part because effectiveness can be measured in many ways: for example, by whether states are in legal compliance with treaties, by whether monetary and other resources are being spent on programs, and by the actual results of the policies in terms of environmental improvements. Policies are also *learning processes* in that the actors involved continually gain new knowledge about problems and engage other parties in parallel efforts to achieve goals.

Climate change resulting from a gradual buildup of greenhouse gases (GHGs) in the Earth's atmosphere is perhaps the most serious, complex, and

contentious of all international environmental policy issues. It is now generally accepted that climate change is resulting from increased GHGs in the atmosphere and that this is a global problem to be reckoned with from local to global levels of authority. Scientific and technical expertise plays an important role in global environmental politics around issues such as climate change, but scientific findings have come under strong and well-funded attacks, with pockets of explicit denial in some countries. Few things illustrate these dynamics better than the acrimonious debates about the methods and language of each IPCC report and the sustained attacks on the credibility and legitimacy of IPCC participants. In Chapter 10, Michele M. Betsill traces the origins of concern over the problem of climate change and analyzes policy responses since the First World Climate Conference in 1979. In the thirty-plus years of globalizing concern, the impacts of climate change—temperature changes, weather volatility and extremes, agricultural changes, ice cap and glacial melt, species migration and biodiversity changes, and rising sea level (to name only a few)—have become increasingly apparent and severe. Growing numbers of local and national communities are threatened by these ongoing and accelerating changes. Betsill discusses the development of scientific research as a basis for negotiations leading to the United Nations Framework Convention on Climate Change (FCCC) in 1992. She explains the principles underlying this historic agreement before analyzing the first binding agreement restricting GHG emissions made pursuant to the FCCC, the Kyoto Protocol of 1997. Although the United States neither ratified nor implemented the Kyoto treaty, the protocol came into legal force because of other states' ratifications. Betsill argues that the Kyoto agreement and subsequent negotiations have many important indirect effects on policy actors at many levels of government and in the private sector—in the United States and in ratifying states. For example, many states and cities and private corporations (in the United States and around the globe) have adopted GHG reduction strategies despite the lack of international consensus. As negotiations for a climate agreement to follow the Kyoto Protocol progressed, the role and actions of the United States, and of the largest developing country emitters, loomed large in global negotiations. Yet, as Betsill makes clear, global climate change governance is a complex, multilevel process not confined only to multilateral treaty making. Such multilevel governance, she argues, presents new opportunities to develop effective policy responses around the world.

A consequence of modern societies' reliance on chemicals and heavy metals is the release of hazardous substances that produce long-term environmental damage and pose significant health risks. Many international and regional treaties address these issues, and the United Nations plays a prominent role. In Chapter 11, Henrik Selin focuses on four such treaties: the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the 1998 Protocol on Persistent Organic

Pollutants to the Convention on Long-Range Transboundary Air Pollution (CLRTAP), and the 2001 Stockholm Convention on Persistent Organic Pollutants. The Basel Convention seeks to regulate trade in hazardous waste through a notification scheme. The Rotterdam Convention focuses on transparency in the trade of chemicals by requiring notification to importers by exporters of such materials. The aim of the CLRTAP Protocol is to reduce the release and long-term transport of persistent organic pollutants. The Stockholm Convention regulates the production of persistent organic chemicals. Selin discusses the accomplishments of these regulatory regimes and the problems they have incurred, suggesting means to strengthen them. Hazardous materials are still produced in large quantities, and many states remain suspicious of relinquishing national authority to international treaty regimes or organizations. Selin's treatment of these issues also demonstrates the tremendous growth in international cooperation over time, from isolated and rather modest agreements to a large and complex set of governance regimes. The European Union has taken a leadership role in adopting regulations targeting hazardous chemicals and electronic waste, but countries all over the world are struggling to manage hazardous substances and wastes. Selin argues for more proactive and precautionary actions, including giving industry greater responsibilities for reducing hazardous waste and the development of greener chemistry.

Biodiversity is often defined as the total variety of all ecosystems and species in the world, including the genetic variation within species. It is declining globally, with serious ecological, moral, and economic ramifications. In the bulk of Chapter 12, G. Kristin Rosendal focuses on the contents, negotiations, and ongoing politics around the 1992 Convention on Biological Diversity, a framework convention, and its associated Cartagena Protocol on Biosafety and Nagoya Protocol on Access and Benefit Sharing. Also part of the global biodiversity regime complex are the older cooperation arrangements focused on wetlands preservation and the protection of migratory and/or endangered species. Global biodiversity politics connects many themes in the volume as a whole, including the challenges associated with North-South politics, differing conceptions of expertise, and the tensions among sustainability, sovereignty, and economic opportunity in international relations.

The formerly socialist countries of Central and Eastern Europe have experienced rapid political and economic transformations over the past generation, moving from Soviet-style communism to capitalist democracy and EU membership.[37] In Chapter 13, Regina S. Axelrod discusses the political controversy surrounding the Temelin nuclear power plant in the Czech Republic. She frames this case in the context of what many call the global renaissance of nuclear power, comparing aspects of Czech nuclear power controversies with ongoing debates in the United States and Japan. Western governments, banks, and corporations and various IGOs were involved in upgrading Soviet-designed nuclear power reactors such as Temelin in Central and Eastern European countries to ensure the reactors' safety and continued operation and to provide alternatives to dirty coal-fired power plants. As Axelrod explains,

however, serious technical and environmental problems have raised questions about the wisdom of this strategy and have led to protests both inside and outside the Czech Republic. She finds a troubling rejection of sustainable development policies by Czech governments since 1992, accompanied by an exclusion of environmental NGOs and the reassertion of state bureaucratic and technocratic methods of decision making. Axelrod argues that nuclear power debates demonstrate that the concept of sustainability remains new and rather marginalized in both the Czech Republic and the United States. Pressure to revive nuclear energy in the United States has been stymied by cost and the absence of a solution to the disposal of nuclear waste. The ongoing Fukushima disaster refocused global attention on the safety and environmental impact of nuclear energy, with hundreds of tons of leaking radioactive water and calls for international assistance from Japan, raising questions about the viability of any global nuclear renaissance. All three countries—the Czech Republic, Japan, and the United States—are grappling with the problem of developing their energy futures and questioning the role nuclear energy will play in light of its long-term environmental and safety issues.

International trade in dangerous substances is only one example of how economic globalization has led to a host of new concerns over environmental impacts. Many environmentalists fear that international trade agreements such as the North American Free Trade Agreement (NAFTA) and establishment of the World Trade Organization will accelerate global environmental degradation in several ways: by increasing the consumption of resources and production of wastes as the result of accelerated economic growth, by shifting capital and production to "pollution havens" with weak environmental laws, and by establishing rules of international trade that may conflict with and override existing multilateral environmental agreements and environmental legislation in individual countries. For example, laws restricting trade in endangered species or banning products harvested using environmentally damaging methods might be found to violate international free trade principles.[38]

In Chapter 14, Daniel C. Esty takes a somewhat more optimistic view of the potential for balancing international trade and environmental protection. He analyzes environmentalists' concerns that liberalized trade and increasing competitive pressures will undermine existing environmental protections, and he summarizes the counterarguments of free trade advocates. NAFTA was the first such agreement to integrate aspects of environmental and trade policy. Esty evaluates the Environmental Side Agreement to NAFTA, generally finding it a more successful effort to balance economic and environmental goals than many critics suggest.[39] Moreover, in the trade agreement negotiating authority granted to President George W. Bush in 2002 by the U.S. Congress and in resolutions at the World Summit on Sustainable Development in Johannesburg, linkages between trade and environmental protection were explicitly recognized. Recent U.S. trade agreements also include some environmental commitments. Esty explores the changing role of the WTO in these issues, as it becomes more sensitive to environmental concerns and the

location of a growing number of environment-related trade disputes. He concludes that the WTO needs reform—especially to increase transparency and access by NGOs—and that the underlying General Agreement on Tariffs and Trade may have to be revised to ensure the trade regime's compatibility with environmental treaties.[40]

Finally, in Chapter 15, Stacy D. VanDeveer addresses the related issues of consumption, transnational commodity chains, and sustainability. Human consumption of the Earth's resources continues to grow as we use up ever-increasing amounts of material throughput. VanDeveer's analysis rests on some basic facts and arguments: that everything comes from somewhere, that all consumption uses things up, and that every transaction along the webs of social relations for any basic commodity or manufactured good consumes (or uses) resources. This ever-increasing material throughput of consumer societies—societies that are being rapidly replicated around the world—means that the ecological and humanitarian damage done by consumption is globalizing and increasing. The things we eat, drink, buy, use, and throw away in our everyday lives leave long trails of destruction, even if they also accrue benefits for their consumers and producers. VanDeveer explores this destruction through discussion of the long and complex product chains for consumer products such as blue jeans, agricultural commodities, and the industries associated with mining and oil and gas extraction. He offers a list of policies that might combat or reduce such harms as well as some examples of ongoing efforts to meet the challenges posed by global consumerism and its costs.

The Uncertain Future

The contributions to this book convey rather mixed and sobering messages. Although substantial progress was made between the 1971 Stockholm and 1992 Rio conferences in establishing international environmental institutions, laws, and policies to address problems such as marine pollution and depletion of the ozone layer, global environmental governance has often faltered since the mid-1990s. The concept of sustainable development turned out to be enormously complex and difficult to implement in the two decades following the Rio Earth Summit, although efforts to do so continue at the global, national, and local levels around the world, producing thousands of interesting policy and social experiments. Again, while some progress has been made, the most basic requirement of sustainable development—raising the living standards of the world's poorest people—has not yet been achieved, nor have environmental concerns been effectively integrated into most sectors of economic and social development in either the richest or the poorest countries. Even as the truly catastrophic outcomes of climate change loom in the not-too-distant future, states and societies around the world struggle to muster the political will to act to reduce the emissions causing climate change, to adapt to the impacts of global climate change, or both.

Most international agencies, including the United Nations Environment Programme, the Global Environment Facility, and the UN Commission on

Sustainable Development, are inadequately financed and torn by economic and political divisions and other ideological conflicts. With the possible exception of the European Union and a few specific policy regimes, international environmental governance remains weak, even by the standards of international governance. National governments also vary greatly in their interpretation of and commitment to the idea of sustainable development, but few have given high priority to environmental sustainability. While the EU often attempts to lead on global environmental issues, the United States continues to struggle to define its role as a leader or a laggard in global environmental governance, and China and other large and influential developing countries remain similarly conflicted.

Despite this, local governments, private organizations, and a host of NGOs have become increasingly important actors in defining the environmental norms of civil society. Also, without engagement and commitments from large and economically dynamic developing states such as China, global environmental governance is unlikely to succeed. The 2009 Copenhagen Climate Change Summit (and subsequent climate change cooperation efforts) and 2012's Rio+20 summit demonstrated the continuing inability of states to come to agreement on binding commitments designed to stave off the most disastrous impacts of environmental change.

The election of a U.S. administration that placed greater emphasis on building renewable energy infrastructure and industries and showed a greater willingness to support more stringent environmental policies, both domestically and internationally, promised to give sustainability issues a new life in the United States. And many European, North American, and Asian leaders and citizens continue to talk about the need for greater multilateral environmental cooperation and the benefits of states competing to become leaders in renewable energy and cleaner technology development. Yet hoped-for cooperation among big players on the global stage remains elusive. Nevertheless, impressive policy efforts can be found at local and national levels around the globe, including the rapid expansion of renewable energy generation in China and some European countries and accelerating efforts to address air and water pollution in a number of the fastest-growing developing countries. And environmental NGOs and social movements have not stopped pushing for stronger, more dramatic action by public and private actors.

Global environmental issues are becoming more critical as more serious, complex, and long-ranging problems surface, but attempts to address them remain a low priority for governments in a world feeling the impact of economic challenges. Although the numbers of international environmental agreements and regimes, and of international and national NGOs, have grown, improvements in the state of the environment are difficult to achieve. Even though the world's nations have acquired more knowledge and expertise about the state of the environment and how to mitigate environmental problems, they have demonstrated less political will to make serious changes and less effective policy implementation. In recent years, however, large developing countries such as China, India, and Brazil have shown greater willingness

than before to engage in global environmental negotiations and governance as well as domestic policy development. Growing awareness of environmental degradation and its public health, economic, and security implications may yet bring countries (North and South) into greater agreement about sustainability. Still, economic issues and interests continue to outcompete environmental ones for political attention and for funding, despite years of sustainable development–inspired assertions and research suggesting that environmental and economic issues need not be at odds.

Whether economic globalization and rising global consumption can be made compatible with the integrity of the Earth's ecological systems and the needs and demands of human social systems remains an open question. Overall, the early years of the twenty-first century have been a period of uncertainty and rather incremental development for international environmental governance. The European Union, some U.S. states, and a few other world leaders demonstrate that environmental policy leadership remains possible and potentially effective and beneficial. Successful cooperation around issues such as the protection of the ozone layer also demonstrates that global environmental governance can be efficient and effective for the public and private sectors. If worrisome environmental trends are to be reversed, such successes and the leadership they require must become the rule rather than the exception. Global environmental problems are becoming more urgent and dangerous. Citizens and public officials need to demonstrate that they can meet these serious challenges if the worst outcomes are to be avoided.

Notes

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