Abstract and Keywords

As far as specialisation is concerned, international environmental law has come a long way from its origins in the application of broad principles derived from state sovereignty to environmental issues. Not only has the number of specialised environmental instruments and institutions grown to the point where some commentators have warned of treaty congestion, but sub-specialties have also developed within many of these regimes. This book takes stock of international environmental law and examines its overarching features. It includes chapters surveying the main issue areas: air, water, biological resources, and hazardous materials. The book analyses the field in more conceptual terms, focusing on issues of structure and process rather than on issues of content. Important topics include: legal design, analytical tools, normative development, key concepts, actors and institutions (states, international institutions, non-state actors), and implementation and enforcement. In particular, it discusses some distinctive features of international environmental problems, the state-centric approach to international environmental law, anthropocentrism and environmental protection, and compliance.

Keywords: international environmental law, international law, environmental protection, environmental problems, state-centric approach, anthropocentrism, compliance, actors, states, non-state actors
INTERNATIONAL environmental law is still a relatively new field (see Chapter 2 ‘Evolution of International Environmental Law’). For example, the UN Charter of 1945 does not list environmental protection among the purposes and principles that it aims to promote, and it was only in the 1970s that a UN body specifically devoted to environmental matters, the United Nations Environment Programme (UNEP), was established. Of course, legal issues that, today, we would describe as environmental issues are not entirely new, nor are legal arrangements that, today, we would describe as environmental agreements or institutions. However, the underlying issues were not usually conceived of as ‘environmental’. Instead, they were seen as resource issues, primarily relating to the conservation of wildlife for human uses.

This anthropocentric outlook not only has a long lineage, but also came to carry a historical burden that still encumbers contemporary efforts to address global environmental problems (see Chapter 12 ‘Critical Approaches’). International environmental law continues to struggle with the complaint that it reflects the concerns of developed countries more than those of developing countries and that it merely rearticulates some of the patterns of colonial exploitation in environmental terms. Just as colonial empires tended to treat their ‘outlying possessions’ as providers of resources—places where it was ‘convenient to carry on the production of sugar, coffee and a few other tropical commodities’—some of the earliest conservation treaties, although concerned with the preservation of flora and fauna in Africa, excluded native populations from these reserves and glossed over the fact that threats to the protected areas and resources actually stemmed from white hunters and colonial exploitation rather than from indigenous uses. It is not difficult to see the debates over colonialism being replayed in the ongoing debates over whether developing countries, for example, should preserve biological resources of global concern or should reduce their greenhouse gas emissions and, if so, how much financial support developed countries should provide for such efforts (see Chapter 26 ‘Sustainable Development’, Chapter 27 ‘Equity’, and Chapter 41 ‘Technical and Financial Assistance’).
sources on the high seas was also an early concern, leading to the development of international regimes to conserve fish and fur seals for future harvesting.

International environmental law began to emerge in a significant way, however, only in the late 1960s and 1970s, as part of a growing concern about environmental problems in many developed countries and their growing awareness of the international and global nature of many environmental issues. During this period, states negotiated conventions on the protection of the marine environment from oil pollution, trade in endangered species, dumping of hazardous wastes at sea, wetlands, and world heritage sites, in some cases with significant involvement by international organizations and non-governmental organizations (NGOs). The United Nations convened the Stockholm Conference on the Human Environment in 1972, which was the first in a series of UN mega-conferences including the 1992 Rio Conference on Environment and Development and the 2002 Johannesburg World Summit on Sustainable Development. Stockholm, in turn, resulted in the UN General Assembly (UNGA) establishing the first multilateral environmental institution, UNEP, headquartered in Nairobi.

Since then, despite ebbs and flows in international concern about the environment, there has been a remarkable growth, overall, in the number and range of international instruments and institutions addressing environmental problems. Indeed, such is the growth of the discipline that, by now, the study of international environmental law has become virtually an industry. It is taught in law schools around the world and is the subject of major treatises and teaching texts, several specialty law journals, and a burgeoning number of monographs dealing with an array of increasingly specialized topics within international environmental law.

As far as specialization is concerned, international environmental law has come a long way from its origins in the application of broad principles derived from state sovereignty to environmental issues. Not only has the number of specialized environmental instruments and institutions grown to the point where some commentators have warned of treaty congestion, but sub-specialties have also developed within many of these regimes. Thus, worries over the ‘fragmentation of international law’ no longer concern merely the impact of the emergence of fields such as international environmental law, human rights law, or international economic law and the attendant proliferation of international courts and tribunals. Concerns have also come to be voiced with respect to the fragmentation of international environmental law itself. Indeed, an expert on the law of marine environmental protection might find it difficult to navigate an air pollution agreement. Similarly, an expert on the rules governing carbon sinks may have trouble communicating with an expert on international emissions trading, notwithstanding the fact that both issues fall under the Kyoto Protocol on climate change.

Whether the phenomenon of increasing specialization within international environmental law is cause for concern is bound to be a matter for debate. But, along with the exponential growth of the field, it is one of the reasons why the present Handbook endeavours to step back and take stock of this growing field as a whole, and to discern its overarching
features. It includes chapters surveying the main issue areas—air, water, biological re-
resources, and hazardous materials (see Part III: ‘Basic Issue Areas’). However, its primary
purpose is not to describe in depth the substantive rules of international environmental
law—several treatises have already performed this task admirably. Instead, it seeks to
analyse the field in more conceptual terms, focusing on issues of structure and process
rather than on issues of content. Important topics include:

- **Legal design**—At what level should environmental governance be exercised: global,
  regional, or national (see Chapter 5 ‘Levels of Environmental Governance’)? What are
  the principal issues in choosing among regulatory instruments (see Chapter 8 ‘Instrument
  Choice’)? To what extent is the distinction between formal and informal norms important
  (see Chapter 6 ‘Formality and Informality’)? What impact do paradigms and discourse, and
  science and technology have on legal design (see Chapter 3 ‘Paradigms and Discourses’ and
  Chapter 9 ‘Science and Technology’)? How might we understand the present design of
  global environmental governance (see Chapter 4 ‘Global Environmental Governance as
  Administration’)? How does international environmental law relate to other areas of
  international law (see Chapter 7 ‘Relationship between International Environmental Law
  and Other Branches of International Law’)?

- **Analytical tools**—How can other disciplines, such as international relations,
economics, ethics, and critical perspectives help us to better understand international
environmental issues and the role that law can play in addressing them (see Part II: ‘Analytical
Tools and Perspectives’)?

- **Normative development**—How do international environmental law norms emerge
  and develop? What is the role of policies, principles, and rules (see Chapter 18
  ‘Different Types of Norms in International Environmental Law’); custom (see Chapter
  19 ‘Formation of Customary International Law and General Principles’); treaty mecha-
nisms (see Chapter 20 ‘Treaty Making and Treaty Evolution’); or private and quasi-
private standard-setting processes (see Chapter 21 ‘Private and Quasi-Private Standard
Setting’)?

- **Key concepts**—What is the deeper conceptual structure of international environmental
  law? What are the key concepts underlying the more specific rules, doctrines, and
  processes (see Part V: ‘Key Concepts’)?

- **Actors and institutions**—Who are the principal actors in the international environ-
  mental process? What roles do they play in its formation, implementation, and enforce-
  ment (see Part VI: ‘Actors and Institutions’)?

- **Implementation and enforcement**—To what extent is international environmental law
  effective and how is compliance best promoted (see Chapter 39 ‘Compliance Theory’)?
  How is it implemented and enforced (see Part VII: ‘Implementation and Enforcement’)?

Although some may continue to contend, as Ian Brownlie once did, that international environmental law is nothing more than the application of international law to environmental problems, the picture that emerges overall is a different one. It suggests that international environmental law has, to a significant degree, become a distinct field—distinct not simply in the sense of addressing a discrete set of problems through a discrete set of substantive rules, but also in the
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stronger sense of having its own characteristic structure and process, and its own set of conceptual tools and methodologies. To be sure, international environmental law remains rooted in international law and draws upon much of its repertoire, such as the rules governing customary law, the law of treaties, the law of state responsibility, and jurisdictional rules. Such rules, moreover, also are relevant in determining the relationship between international environmental law and other substantive areas of international law, such as human rights law or international economic law (see Chapter 7 ‘Relationship between International Environmental Law and Other Branches of International Law’). However, as this Handbook demonstrates, international environmental law now comes complete with its own distinctive cast of characters, legislative and administrative processes, and concepts.

1 Some Distinctive Features of International Environmental Problems

In understanding the special characteristics of international environmental law, it is useful, at the outset, to consider several features of international environmental problems that serve to distinguish them from other international problems.

*International environmental problems are caused primarily by private conduct.* International law primarily addresses questions of governmental conduct: claiming territory, using force against other states, suppressing human rights, exercising jurisdiction, and so forth. Some environmental problems are also the product of governmental conduct—for example, the blowing up of Kuwaiti oil wells by Iraq during the first Gulf War. Yet most pollution and natural resource depletion result from private activities. Consider climate change, for example. Emissions of carbon dioxide and other ‘greenhouse gases’ result from generating and consuming electricity, driving cars, manufacturing products, growing food, and cutting trees—activities that qualify as private rather than governmental. The same is true of other international environmental problems as well: threats to African elephants come from the consumers who wish to purchase ivory products and from the poachers who satisfy that demand by killing elephants; oil pollution results from the combined actions (or inactions) of oil producers, shipbuilders, shippers, and, ultimately, individuals who consume oil for transportation and other purposes; deforestation results from demand by local populations for fuel wood and for agricultural land, and by local and more distant populations for timber. Virtually all human activity involves, to one degree or another, the consumption of resources or the generation of wastes and, thus, contributes to environmental problems.

The challenge for international environmental law is to develop effective ways of regulating these private activities. Traditionally, international law has governed the conduct of states, not individuals. Thus, in order to control private activities, it must (p. 7) either do so at one step removed, by requiring states to regulate or otherwise influence the behaviour of the relevant non-state actors within their borders, or it must find ways to engage private actors more directly (see Chapter 31 ‘Changing Role of the State’).
International environmental problems have a physical and technological basis. Most problems addressed by international law are predominantly political in nature: war, human rights abuses, trade protectionism. These are failures of human behaviour, which international law seeks to address through the development of rules, institutions, and other modalities of international governance. Environmental issues, of course, also have political dimensions. But they have an additional dimension as well, which is not generally shared by other international problems: they involve impacts, often technology driven, on extremely complicated physical processes, which can be understood only with the aid of science (see Chapter 9 ‘Science and Technology’). The ozone problem, for example, results from the incidental release of synthetic compounds such as chlorofluorocarbons (CFCs), which migrate to the upper atmosphere and catalytically react with ozone, thereby breaking down the ozone layer. The problem was created by technology, diagnosed through Nobel Prize-winning science, and, ultimately, addressed through the development of new technologies.

International environmental problems involve significant scientific uncertainties. Although international environmental disputes are often attributable to differences in interests and values among states, they are complicated by uncertainties concerning the facts. Many modern environmental problems have effects that are widely dispersed and long term, with long latency periods. Given the complexity of the physical, economic, and social processes involved, we often do not know for sure how serious a problem is, what its causes are, how expensive it will be to address, whether it is even a problem at all, and, if it is, whether it is still possible to address. Is the buildup of greenhouse gases in the atmosphere causing global warming, and, if so, how much warming will occur and with what effects? Do genetically modified organisms pose a danger to other species and to human health? Are human fertility rates declining, and, if so, to what extent is this decline attributable to persistent organic pollutants? On these and many other questions, scientists cannot provide conclusive answers. Some argue, for example, that we do not know enough about climate change to justify potentially costly preventive policies; others predict dangerous levels of warming and argue that, if we delay action in order to get better scientific information, it will become too late to act. No matter what choice we make, it may have serious consequences. Decisions must be made in the face of uncertainty (see Chapter 25 ‘Precaution’).

International environmental problems are extremely dynamic. Environmental problems present a moving target. In part, this fact results from changes in scientific knowledge. When the Montreal Protocol on Substances That Deplete the Ozone Layer (Montreal Protocol) was adopted in 1987, the Antarctic ozone hole had just been discovered and its significance was not fully understood. By 1990, it had become (p. 8) clear that the Montreal Protocol’s requirement to reduce the production and consumption of ozone-depleting substances by 50 per cent was inadequate and that stronger control measures were needed. In response, the parties adopted the London Amendments, which provided for the complete phase-out of the principal ozone-depleting substances. Since then, the ozone regime has continued to evolve as our scientific understanding of the problem has developed. Moreover, not only does scientific understanding develop, environmental problems them-
selves change as human behaviour and technology change. For example, economies grow, consuming more resources and producing more wastes; new chemicals are created, sometimes replacing more harmful substances but sometimes creating new risks; a fish stock becomes depleted, so fishermen move on to other fisheries and begin to overfish them. International environmental law is a Heraclitian world, in which there are few constants except change itself.

*International environmental problems are interconnected and need to be addressed holistically.* It is by now almost a cliché that everything is interconnected and that addressing one problem may contribute to another. In the early twentieth century, for example, factories built taller smokestacks in order to disperse pollutants more widely and thereby reduce local air pollution. But this ‘solution’ merely converted air pollution from a local to a regional concern. Similar kinds of interconnections characterize a wide variety of environmental issues. Some of the leading replacements for ozone-depleting substances are greenhouse gases, which therefore contribute to global warming. The protection of one species may allow it to multiply, with adverse effects for other species. The limitations on nuclear energy may result in greater use of fossil fuels and higher emissions of carbon dioxide. Environmental problems do not come packaged as discrete units that can be treated in isolation, without regard to their wider repercussions. Instead, they need to be addressed on a more holistic basis (see Chapter 24 ‘Ecosystems’).

With respect to many environmental issues, states and people around the world are interdependent as well. For example, the Earth has only one ozone layer and one climate system, so that no state can immunize itself against harmful effects or address ozone depletion and climate change without cooperating with other states. Likewise, states benefit from preventive steps taken by other states. Relationships of interdependence, and the need for cooperation, similarly exist with respect to regional and transboundary environmental concerns.

2 Traditional State - Centric Approach

As traditionally conceived, international law sought to regulate the interactions of states by defining their respective rights and obligations. Despite its tremendous development, international environmental law remains rooted in this inter-state system and, to a significant degree, can still be understood as an effort to reconcile the differing and often competing concerns of states.

Within this state-centric paradigm, environmental problems become legally relevant when activities within one state inflict significant harm within the territory of another. Under classical principles of international law, the concept of state sovereignty gives rise to two potentially contradictory notions: the principle of territorial integrity recognizes the right of states to be free of interference from others, and the principle of territorial sovereignty recognizes the freedom of states to do as they like within their own territory. International environmental law aims to strike a balance between territorial integrity and territorial sovereignty, since neither can be absolute in the environmental context. This
goal is reflected in the obligation not to cause significant transboundary harm, which represents a ‘cornerstone’ of international environmental law (see Chapter 22 ‘Transboundary Impacts’). The need to balance the competing sovereign interests involved is even more clearly reflected in the principle of ‘equitable utilization’, which is set forth in the UN Convention on the Law of Non-Navigational Uses of International Watercourses (Watercourses Convention) (see Chapter 15 ‘Oceans and Freshwater Resources’), and reflected in the International Law Commission’s 2001 Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities, which calls for solutions based on ‘an equitable balance of interests’.

From an economic perspective, the no-harm rule can be understood as an effort to ‘internalize’ significant transboundary externalities. Externalities are the costs of an activity that are not borne by the actor but that fall on others. For example, one country emits sulphur dioxide that causes acid rain to fall on its neighbour downwind or it discharges pollution into a river, causing damage to lower riparians. To the extent that a country is able to ‘externalize’ the costs of polluting, it has no economic incentive to stop. The no-harm rule is meant to address this problem, by prohibiting one state from imposing significant environmental costs on another.

Although the no-harm principle has, by now, achieved canonical status, in practice, it is not consistently applied to resolve specific environmental disputes by courts or tribunals. Despite considerable efforts to codify the rules of state responsibility for transboundary pollution (see Chapter 44 ‘International Responsibility and Liability’), the Trail Smelter case, which arose between the United States and Canada in the 1920s, remains the only case where a state has been found legally responsible for failure to prevent transboundary pollution. Even the massive transboundary pollution caused by the Chernobyl and Sandoz accidents did not lead to legal claims by the victim states.

Instead, transboundary impacts have been addressed, if at all, in a more pragmatic way, through negotiations among the states concerned to reach a mutually satisfactory outcome—and, in some cases, to establish institutional arrangements that can manage the externalities on an ongoing basis. Examples include the International Joint Commission, which has been operating for close to a century under the 1909 US–Canada Boundary Waters Treaty, and the Long-Range Transboundary Air Pollution (LRTAP) regime in Europe. To some degree, the no-harm rule and the equitable utilization principle form part of the legal context in which these solutions are negotiated and implemented.

However, neither the principles of international environmental law nor the existence of transboundary institutions guarantee the expeditious resolution of trans-boundary pollution problems. There is some irony in the fact that the Trail Smelter itself is again the subject of disagreement between Canada and the United States and that the no-harm rule, which the first Trail Smelter case so famously helped crystallize, has not played a significant role in the resolution of the current dispute. Nor has the International Joint Commission been able to resolve the matter, notwithstanding the fact that the issue is one of transboundary water pollution, and that the commission is a well-established insti-
tution. Indeed, the inter-state level and international environmental law have been by-passe through efforts by governmental and nongovernmental actors within the United States to apply US law to the Smelter’s activities and its alleged transboundary impacts. In short, the inter-state paradigm is under strain even in the ‘classical’ transboundary context in which the basic, sovereignty-derived rules of international environmental law originated.

3 New Types of Environmental Concerns in International Law

The traditional state-centric approach conceptualizes international environmental problems in terms of the mutual rights and responsibilities of polluting and victim states. Yet international environmental law has evolved considerably from its state-centric roots, and now encompasses a much wider set of concerns.

3.1 Common Concerns

To begin with, many international environmental issues reflect not the interests of individual states, but rather the common concerns of the international community (see Chapter 23 ‘Common Areas, Common Heritage, and Common Concern’). Along with transboundary impacts, environmental impacts that affect areas beyond national jurisdiction—such as the high seas and, arguably, Antarctica—were among the first topics of international environmental regulation. These impacts are obviously of common concern, not only because the harms fall on all of the users of the commons, rather than on only a single state, but also because protection of the commons requires collective action. The same is true, of course, for the relatively more recent concerns over the degradation of globally shared resources, such as the ozone layer or the climate system. In all of these cases, since no single state can comprehensively regulate access or use, states must agree on mutual restraints in order to prevent a tragedy of the commons.

Today, the range of environmental problems that are considered common concerns' has grown significantly, and encompasses as well the protection of resources that, while found within a particular country, are considered to provide global benefits, for example, world heritage sites and biological diversity. Although these resources—unlike, say, high seas resources or the climate system—could potentially be protected by the territorial sovereign, it may lack the incentive to do so on its own, especially to the extent that the benefits of the resources go to the international community. And it remains unclear to what extent individual states owe obligations to protect such resources erga omnes—that is, under customary international law and to the international community as a whole.

When environmental impacts affect a commons area or common interests, collective action is thus required for a number of reasons. Legally speaking, individual states lack rights that they could effectively invoke to demand protection of a commons or of resources located within other states. Practically speaking, states' interdependence in
terms of both contributions and solutions demands cooperation in addressing collective environmental concerns. The response by international environmental law, therefore, has tended to consist of efforts to build multilateral, treaty-based regimes. The enduring challenge, not surprisingly, is to bring sufficient numbers of key states to participate in a given regime and then to ensure the compliance of participating states with their commitments.

Typically, solutions to collective action problems depend on a feature generally absent at the international level—that is, governmental institutions. Viewed from this perspective, the task of international environmental institutions is to provide governance without government—that is, to influence state conduct in order to produce collective benefits. The use of international environmental law to provide global collective benefits raises two important questions. First, how can international institutions be designed in order to accomplish this objective? Specifically, how can states be motivated to join an international environmental regime and then to comply with the standards it sets? And, second, how should the burden of producing collective benefits, such as restoring the ozone layer, preserving biological diversity, or mitigating climate change, be shared among the international community?

The first question has been the subject of lively scholarly debates, in which international lawyers have increasingly engaged with the insights of other disciplines, notably international relations and economics, to gain new insights into institution building. Thus, recent economics and rationalist international relations literature has focused upon such design variables as the nature and stringency of a regime's commitments (soft versus hard, general versus precise, shallow versus deep), its rules regarding membership and voting, and its compliance system (see Chapter 10 'International Relations Theory' and Chapter 11 'Economic Theory of International Environmental Law'). According to this literature, to the extent that mutual restraint produces a net benefit, it should be possible, in theory, to design an international environmental regime to distribute this gain so as to leave every state better off—in other words, it should be possible to find a solution that provides a Pareto benefit. But, even if this were in practice possible, it might not be enough to induce states to cooperate. In cooperative games such as the prisoner's dilemma, both sides benefit from cooperation, but, nonetheless, each party has an incentive to defect. The same is true of environmental problems. When the gain from environmental cooperation is what economists refer to as a public good—protection of the ozone layer, mitigation of climate change, and so forth—states share in that gain whether or not they participate in producing it. As a result, effective environmental regimes require design elements that reward participation and penalize free riding (see Chapter 11 'Economic Theory of International Environmental Law').

By contrast, constructivist international relations theory suggests that an exclusive focus on states' interests and their strategic pursuit of these interests may be unduly narrow. In particular, it neglects the question of where states' interests come from in the first place and, thus, the important possibility that they are at least in part shaped through states' interactions. These interactions, in turn, are framed by international norms. Actors' con-
duct, one line of reasoning goes, is shaped not only by a logic of consequences (the rational pursuit of material interests), but also by a logic of appropriateness, leading actors to assess their conduct in light of applicable norms and attendant expectations of other actors.\textsuperscript{22} For global regime building, the important lesson is that shared normative understandings must be gradually cultivated and deepened, and that regimes must be designed so as to maximize the opportunities for normative interaction, and pressures on states to justify their conduct in light of applicable standards.\textsuperscript{23} Many international environmental regimes follow this design logic through a progressive deepening of initial framework treaties (see Chapter 20 ‘Treaty Making and Treaty Evolution’), and ongoing law-making and justificatory processes, including compliance procedures (see Chapter 43 ‘Compliance Procedures’). Of course, precisely this ‘transformational’ regime-building strategy has been criticized by the rationalist strands of international relations theory, on the ground that it is unlikely to succeed where a regime requires states to make costly policy changes.\textsuperscript{24}

The second question, regarding burden sharing, raises the issue of intra-generational equity, which has taken on a strong North-South dimension (see Chapter 12 ‘Critical Approaches’ and Chapter 27 ‘Equity’). A variety of equity principles have been suggested to allocate burdens, including historical responsibility and ability to pay. The principle of common but differentiated responsibilities has emerged as the most commonly invoked burden-sharing concept, but it does not specify exactly how responsibilities should be differentiated. Some formulations of the principle, such as Article 3 of the UN Framework Convention on Climate Change (UNFCCC), include the phrase ‘and respective capabilities’, suggesting that capacity to pay is relevant along with historical responsibility. Similarly, Principle 7 of the Rio Declaration on Environment and Development highlights both ‘the different contributions to global environmental degradation’ and ‘technologies and financial resources’ as bases for differentiation.

The invocation of these equitable principles also leaves unanswered the questions what it is that developed countries are to pay for and how much they are to pay. While the latter issue is one that can be resolved only through negotiation, the former question has been answered, at least to some extent, through the emergence of the notion of incremental costs. It demands that developed countries pay for the costs of measures taken in developing countries that benefit the international community as a whole, instead of only the state in which a measure is taken. The notion of incremental costs, however, remains controversial for at least two reasons. First, it is often difficult to distinguish which costs of measures produce global, as opposed to local, benefits. Second, and more fundamentally, the opinions of developing and developed states differ greatly as to the appropriateness of applying the principle of common but differentiated responsibilities only to measures benefiting the international community. Thus, it seems fair to say that while the international community has progressed in identifying issues that are of common concern, considerably less progress has been made in developing a shared conceptualization of how to deal with these issues in the North-South context.
3.2 Future Generations

Issues such as biodiversity, climate change, and, more generally, sustainable development expand the ambit of environmental concern along an additional dimension: into the future. Although some types of environmental damage are transitory, the consequences of many environmental problems are long term and, in some cases, irreversible. When a species becomes extinct, for example, the loss is permanent. Similarly, current emissions of greenhouse gases will have effects far into the future, due to the inertia of the climate system. In both cases, our actions now impose environmental impacts not only on other countries but also on future generations.

The principles of sustainable development (see Chapter 26 ‘Sustainable Development’), inter-generational equity (see Chapter 27 ‘Equity’), and precaution (see Chapter 25 ‘Precaution’) all reflect this concern about the future—sustainable development and inter-generational equity most directly, precaution through its particular focus on irreversible damage. According to the most widely quoted definition of sustainable development, ‘sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.’

The problem with definitions such as these—and there are now literally hundreds of them—is to determine what they mean in practice. Although it is easy to agree that we should be concerned not merely with our own welfare but also with that of future generations, it is far less clear how we need to act in order to give that principle effect. In practice, these inter-temporal principles tend to be most relevant in shaping international environmental discourse and framing treaty-based regimes, which can then flesh out what precautionary actions are to be taken, or define sustainable resource use or emissions levels in a given context.

From an economic perspective, harm to future generations represents a type of externality, which, if it is to be dealt with, must be internalized by putting appropriate values on future damages and factoring those costs into present-day decision-making. Such cost internalization is, in economic terms, the function of the international regimes addressing such issues as climate change and biodiversity. But, of course, economics cannot answer the many hard distributional questions that are raised by intertemporal environmental concerns.

A central debate concerning the principles of sustainable development and inter-generational equity is whether they imply the need to conserve any particular resources—what might be considered ‘global heirlooms’ (see Chapter 13 ‘Ethics and International Environmental Law’). If, as mainstream economics assumes, natural resources are infinitely substitutable, including by human and technological resources, then there is no need to protect any particular resources for the benefit of future generations. The emerging field of ecological economics, however, challenges this assumption of infinite substitutability. According to ecological economics, some natural resources are non-substitutable, and need to be protected for the sake of future generations—for example, resources that are critical to life support, such as the climate system and the stratospheric ozone layer, as well as unique resources, such as world heritage sites. Yet this perspective raises further
questions: Should we preserve such resources without regard to cost? Do they, in essence, have infinite value? Will the resources that we consider critical today be those that future generations consider critical? How are we to make those choices on behalf of future generations when they are not here to tell us what they want? No matter which choices we make, we will be taking decisions that affect future generations—this is the philosophical and moral conundrum that we face. The principles of sustainable development and inter-generational equity squarely raise these difficult questions, but do not answer them.

3.3 From Anthropocentrism to Environmental Protection as an End in Itself?

In general, international environmental law has an anthropocentric bias. It focuses on protecting the environment, not for its own sake, but because of its value to humans—its importance for human health, economics, recreation, and so forth. The very first international agreement to be negotiated, in 1900, addressed the protection of African wildlife for the benefit of European hunters, and most subsequent agreements continue to have a utilitarian focus. The landmark Stockholm Conference was entitled, significantly, the Stockholm Conference on the Human Environment. And the principle of sustainable development, which today serves as the organizing principle for international environmental law, focuses on the needs of humans, as did the Rio Conference and the Johannesburg Summit.

The human interest in environmental protection has also found, more recently, direct expression through human rights law. While a specific right to a clean environment has not emerged in international law, there is ample evidence that established human rights, such as the rights to life, health, property, or privacy, can be interpreted to encompass environmental concerns (see Chapter 28 ‘Environmental Rights’). In addition, procedural rights, such as rights of participation in environmental decision-making and of access to justice, have become entrenched through treaty law (see Chapter 29 ‘Public Participation’).

Yet, increasingly, international environmental law has displayed a more ecocentric approach, despite the philosophical challenges that such an approach poses (see Chapter 13 ‘Ethics and International Environmental Law’). The ten-year follow-up to the Stockholm Declaration on the Human Environment was entitled the World Charter for Nature and declared that ‘every form of life is unique, warranting respect regardless of its worth to man.’ Similarly, the 1992 Convention on Biological Diversity speaks of the ‘intrinsic value’ of biological diversity (although it defines biological resources in terms of resources with ‘actual or potential use or value to humans’). The evolution from a utilitarian to a more environmentally oriented ethic can be seen in the international whaling regime, which started as an effort to conserve whales in order to make possible the orderly development of the whaling industry, but which has become, in essence, a preservationist regime, prohibiting commercial whaling of all species, whether or not they are endangered (see Chapter 16 ‘Biological Resources’). A number of international environmental agreements have also recognized the intrinsic value of ecosystems (see Chapter 24...
'Ecosystems'). The 1991 Protocol on Environmental Protection to the Antarctic Treaty is an example in the global commons context. At the regional level, the first joint Ministerial Meeting of the Baltic Marine Environment Protection Commission, and the Commission for the Protection of the Marine Environment of the North East Atlantic, in 2003, agreed to adopt an ecosystem approach to the management of human activities. In this approach, human activities are treated as a component of ecosystems, and are to be managed in accordance with the capacity of ecosystems. In the transboundary context, Article 20 of the Watercourses Convention provides that states ‘shall individually and, where appropriate, jointly protect and preserve ecosystems of international watercourses’ (see Chapter 15 ‘Oceans and Freshwater Resources’). Significantly, in an agreement that is otherwise concerned with a traditional balancing of states’ respective sovereign rights, this provision envisages ecosystem protection duties that are independent from significant impacts on neighbouring states.

4 Actors and Institutions

Contemporary international environmental law not only encompasses a much wider range of concerns, but it also involves an increasingly complex array of actors. States, international institutions, individuals, NGOs, business, and technical experts—these categories only begin to capture the rich variety of actors. NGOs can have many different characteristics. For example, they can be international or domestic, large membership organizations or small think tanks, advocacy or programmatic organizations. Business can be green or brown, domestic or multinational. International institutions include traditional international organizations, as well as treaty bodies and regional integration organizations.

These various actors can be analysed along several interrelated dimensions (see Chapter 33 ‘Non-Governmental Organizations and Civil Society’). First, we can study the types and degree of influence they exercise at different junctures in the policy cycle: agenda setting, normative development, implementation, and enforcement. For example, NGOs can help define an issue, promote it on the policy agenda, exert pressure on national delegations during the negotiations, monitor state compliance, and, in some cases, even bring complaints regarding inadequate enforcement. International institutions such as UNEP traditionally have played a catalytic role in helping to set the environmental agenda, but, today, international institutions are increasingly a site of normative development.

Second, actors can be analysed in terms of the basis on which they exercise influence or power. The basis of scientists' influence is, of course, expertise, and, for this reason, they tend to be less influential in the process of normative development, which involves questions of value, and more influential at stages in the policy process that involve issues with objective answers (for example, are there adequate substitutes for halons in fire extinguishers?). Some NGOs also play an expert role, but others have a representative basis,
deriving their influence from their membership. Businesses too can be a source of expertise but can also exert market and financial power.

Finally, actors can be analysed by focusing on the different causal pathways through which they exercise influence. For example, many NGOs and businesses still operate primarily through states (see Chapter 31 ‘Changing Role of the State’). They exercise influence by pushing their own state to support a policy internationally or to implement its international obligations. Increasingly, however, NGOs and the business sector participate more directly in international institutions. And, sometimes, NGOs also act directly in the national or international marketplace through the threat or use of consumer boycotts.

4.1 States

Despite the increasing importance of other actors in the international environmental process, states remain the dominant players in both the development and implementation of international environmental law (see Chapter 31 ‘Changing Role of the State’). Most of the substantive content of international environmental law—whether in the form of treaties or softer instruments such as codes of conduct or guidelines—has developed through a process of inter-state negotiation, even if other actors may play significant roles in that process. And implementation of these norms depends primarily on national action: enactment of international standards into domestic law, establishment of domestic permitting procedures, monitoring and reporting on regulated activities, punishment of violations, and judicial application (see Chapter 40 ‘National Implementation’).

However, although states remain central, the nature of the state system is itself changing. The state is becoming more porous not only economically but also environmentally. As a result, it is increasingly difficult to draw a clear separation between international and domestic environmental policy. A problem such as climate change is not just a foreign relations problem. It has implications for virtually every aspect of domestic policy: energy, transportation, construction, and land use. And, as the most recent Trail Smelter case serves to illustrate, even more localized transboundary pollution problems implicate a variety of governmental, and non-governmental, actors and will not necessarily be resolved through traditional inter-state channels.

International environmental law also has eroded the principle of the sovereign equality of states by differentiating among states in terms of both their obligations and their rights and, thus, has acknowledged the reality that states are heterogeneous rather than homogeneous. This development is reflected not only in the ‘principle of common but differentiated responsibilities’, which differentiates among states according to their contributions to a given problem and their capacity for problem-solving, but also finds expression in the decision-making procedures of institutions such as the Global Environment Facility (GEF), and the Montreal Protocol and Kyoto Protocol compliance committees, which require double-majorities of developed and developing states (see Chapter 32 ‘International Institutions’).
4.2 International Institutions

The development of international environmental law during the second half of the twentieth century and, in particular, after the Stockholm Conference in 1972 cannot be grasped without taking into consideration the role of international institutions (see Chapter 2 ‘Evolution of International Environmental Law’). These institutions are not a homogenous set of actors, and they perform a variety of functions in the development and implementation of international environmental law. International institutions, furthermore, interact through, and are linked to, each other by a variety of arrangements (see Chapter 32 ‘International Institutions’).

Within this complex web of institutions, the United Nations, through, in particular, the UNGA, the Economic and Social Commission, and the Commission on Sustainable Development, plays a coordinating role. The UNGA, for example, convened the three major environmental summits—Stockholm, Rio, and Johannesburg—and established UNEP. These summits have played an important role in generating political consensus on the issues to be addressed in international law and policy.

International institutions, such as UNEP and various UN specialized agencies, perform a catalytic role in problem identification, and in the negotiation and further development of environmental regimes. They play a role in problem identification, in particular, by providing forums for coordinating scientific research (see Chapter 9 ‘Science and Technology’); they support the development and implementation of international environmental treaties by hosting the secretariats for negotiating conferences and for, so-called, multilateral environmental agreements (MEAs). MEAs, in turn, also have generated a large number of international institutions, including conferences of the parties, which are not international organizations, as traditionally understood, but have traits and perform roles that closely resemble those generally attributed to international organizations (see Chapter 38 ‘Treaty Bodies’). International financial institutions, such as the World Bank and the GEF, coordinate the transfer of financial and technological resources and thus play a role in the implementation of the principle of common but differentiated responsibilities (see Chapter 41 ‘Technical and Financial Assistance’). Monitoring and verification programmes and compliance procedures, furthermore, are coordinated through, in particular, institutions associated with MEAs (see Chapter 42 ‘Monitoring and Verification’ and Chapter 43 ‘Compliance Procedures’). In addition, a number of courts and tribunals, at least in principle, have jurisdiction to consider environmental disputes (see Chapter 45 ‘International Dispute Settlement’).

In the course of performing these functions, many international institutions both engage in normative development, and administer international environmental law (see Chapter 20 ‘Treaty Making and Treaty Evolution’ and Chapter 32 ‘International Institutions’). These activities have contributed to the emergence of a distinctive type of law, now often referred to as global administrative law (see Chapter 4 ‘Global Environmental Governance as Administration’).
4.3 Non-State Actors

Two distinctive features of international environmental problems have had particular implications for the non-state actors involved in the international environmental process. First, the fact that environmental problems have a physical basis means that science figures much more prominently in international environmental regimes than in other areas of international law (see Chapter 9 ‘Science and Technology’). Scientists often operate through expert networks that share a common knowledge base, and whose individual members exercise influence at both national and international levels of policy-making. The role of scientists is perhaps greatest in the agenda-setting process, although technical experts can also play a significant role in the process of elaborating and implementing international environmental regimes (see Chapter 34 ‘Epistemic Communities’). Many pressing environmental problems, such as climate change or ozone depletion, were not immediately apparent; they were recognized as problems only as a result of science. For example, when CFCs—the principal ozone-depleting substances—were first invented in the 1920s, they were considered completely benign—not flammable, explosive, or toxic. They became an international issue only decades later, in the 1970s, as a result of the Nobel-prize winning work of two atmospheric chemists who realized that, over time, CFCs would migrate to the upper atmosphere and catalytically react with ozone, thereby destroying the stratospheric ozone layer. Similarly, in the 1980s, climate change became an important political issue due to both significant advances in basic science and the entrepreneurship of a small number of scientific knowledge brokers, who pushed the issue through a series of international meetings and hearings at the national level. Their efforts provided knowledge about the existence of the problem, raised public awareness and concern, influenced national policy-makers, and helped begin an international dialogue, initially at the non-governmental level but, as the issues gained prominence, increasingly among governments as well.

Second, because most environmental problems are caused primarily by conduct that qualifies as private rather than governmental, the business community has an unusually high stake in international environmental regimes (see Chapter 35 ‘Business’). Typically, although states are the direct addressees of international environmental obligations, private actors are the ultimate regulatory target. Some international environmental regimes actually define the applicable standards of private conduct directly. For example, the International Convention for the Prevention of Pollution from Ships (MARPOL Convention) establishes detailed construction and design standards for oil tankers, which ship builders and vessel operators must follow—states act merely as transmission belts, applying the MARPOL Convention’s standards to their flag vessels. Other international environmental agreements require states to adopt elaborate regulatory machinery to control private conduct, including permitting schemes for waste disposal or for trade in endangered species, or prior informed consent requirements for transport of hazardous materials. Still other international environmental regimes, such as the Kyoto Protocol, simply require states to bring about a particular result but leave it up to states to decide how to influence private conduct in order to achieve this result.
Since private actors are the ultimate target of most international environmental regulation, they are particularly active in the international standard-setting and implementation processes. Businesses typically influence policy and rule-making in order to further their own business interests—in the case of ‘green’ business, by gaining a competitive advantage through the adoption of more stringent environmental measures; in the case of ‘brown’ business, by seeking to stall the adoption of more stringent measures in order to continue doing business as usual. Sometimes industries develop environmental standards on their own in order to enhance their image, forestall governmental regulation, or influence the development of internationally uniform standards in anticipation of governmental regulation. These private and quasi-private standard-setting efforts are an increasingly significant feature of international environmental law, and raise important issues of participation and legitimacy (see Chapter 21 ‘Private and Quasi-Private Standard Setting’).

Finally, environmental NGOs play a significant role in virtually every aspect of the international environmental process (see Chapter 33 ‘Non-Governmental Organizations and Civil Society’). Depending on their membership, they may be regarded either as ‘giving the environment a voice’ and thus acting in the common interest or as representing the particular interests of their membership in preserving a specific natural environment. International NGOs such as Greenpeace and the World Conservation Union are examples of the former; NGOs representing local populations or indigenous peoples are examples of the latter (see Chapter 36 ‘Indigenous Peoples’). Although typically, NGOs wield influence by attempting to influence states, in some cases, NGOs play a more direct role in international environmental regimes. For example, under the Montreal Protocol, they may provide information on state compliance to the Secretariat, while under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), NGOs have quasi-official roles in monitoring and reporting processes. As mentioned, NGOs also act directly in the national or international marketplace by using or threatening consumer boycotts. Relevant examples are the campaigns against the consumption of ivory and seal fur.

5 Normative Development

The dynamic quality of international environmental issues has necessitated the development of more dynamic and flexible standard-setting processes. Treaties remain the basis of most international environmental regulation. But, in most international environmental regimes, they no longer reflect a static set of rules agreed to by states for an indefinite period of time. Instead, they establish iterative processes, which allow international environmental law to develop more rapidly in response to the emergence of new problems and new knowledge and understanding (see Chapter 20 ‘Treaty Making and Treaty Evolution’). Broad framework agreements, such as the LRTAP Convention or the UNFCCC, which establish the basic principles and institutions of their respective regimes, are elaborated by more precise regulatory protocols addressing particular pollutants or activities. Technical details are assigned to annexes that can be amended more easily, usually
through tacit consent procedures. Vague treaty norms, such as the 'wise use' requirement for wetlands, set forth in the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, are elaborated through decisions of treaty bodies. In essence, modern environmental treaties establish ongoing regulatory processes that exemplify what has been referred to more generally as global administrative law (see Chapter 4 ‘Global Environmental Governance as Administration’).

The result is that, in most international environmental regimes, the treaty text itself represents just the tip of the normative iceberg. The majority of the norms develop through more flexible and dynamic processes, which result in formally non-legally binding decisions. This is the reason why, in order to understand international (p. 22) environmental regimes such as the regime on trade in endangered species, one needs to consult not merely the CITES agreement itself but also the CITES handbook—a thick book that compiles the various decisions by the CITES parties on the listing process, reporting, compliance, and so forth.

In this more flexible process of normative development, it is worth highlighting two related features, which not only aim to promote community interests in the environment but also raise concerns about the legitimacy of the international environmental process (see Chapter 30 ‘Legitimacy’). First, the need for collective action has eroded the requirement of state consent, which traditionally served to legitimize international law. Of course, ordinary consent-based methods still play a role in regime development. For example, when an agreement is amended or when an additional treaty, such as a protocol, is adopted, individual states are bound only when they consent to these instruments. But more and more regulatory detail is adopted through decisions of a treaty's Conference of the Parties, without subsequent formal consent by individual states. Under the climate change regime, for example, the bulk of the regulatory work has been accomplished through simple decisions of the plenary body.

Second, regime-based law-making processes provide an arena in which actors other than states, such as international organizations, NGOs, individuals, or business entities, can directly participate (see Chapter 29 ‘Public Participation’ and Chapter 32 ‘International Institutions’). Although, in a formal sense, law-making remains firmly in the hands of states, actors other than states have opportunities to provide input into law-making processes and help shape their outcomes. To the extent that these other actors, although unelected, represent broader constituencies, their involvement in the international environmental process might be seen as reflecting a more inclusive approach to the environmental concerns of the wider international community.

These trends are reinforced by the extensive use of informal methods of environmental standard-setting—codes of conduct, guidelines, and their like (see Chapter 6 ‘Formality and Informality’). Although even soft standards are subject to tough and protracted negotiations, their non-binding character to some extent may facilitate reaching agreement upon collective action. In some cases, informal norms may be sufficient in themselves (the ISO 14000 standards are perhaps an example); in others, they serve as intermediary
steps on the road towards a binding agreement; in still others, they are adopted in the context of a binding agreement. In all of these cases, informal standard-setting processes allow speedier regime development, and adjustment, than processes that require ratification by individual states.

In this dynamic standard-setting process, one traditional source of international law that has diminished in importance is customary law (see Chapter 19 ‘Formation of Customary International Law and General Principles’). The decentralized, and uncoordinated, nature of the customary law-making process make it ill-suited for generating the kinds of detailed rules necessary to regulate the use of hazardous materials, the trade in endangered species, or the emissions of long-range pollutants. As a result, most of the action in international environmental law relates to treaty regimes rather than custom. The customary law process is able to generate only quite general principles, such as the duty to prevent transboundary harm. Apart from an occasional international or national case where norms of customary law might be invoked, these norms operate as broad principles that frame legal discourse and diplomacy—so their formal legal status is of only limited practical significance. They play a significant role in the broader process of persuasion and justification that characterizes international environmental law, rather than as rules that govern behaviour (see Chapter 18 ‘Different Types of Norms in International Environmental Law’).

### 6 Compliance

International environmental law illustrates the limitations of the classical approach in international law to compliance. In traditional international legal theory, compliance focuses on such concepts as breach, state responsibility, invocation of responsibility by another state, dispute settlement, and, ultimately, remedies such as restitution and compensation (see Chapter 44 ‘International Responsibility and Liability’). However, as is well known, this general model is seldom applied in international law generally, and even less so in international environmental law. States rarely try to enforce international environmental law by invoking state responsibility, and few cases of non-compliance are ever addressed through traditional dispute settlement (see Chapter 45 ‘International Dispute Settlement’), perhaps because environmental disputes, due to their multilateral nature, are not satisfactorily addressed by dispute settlement procedures that typically have a bilateral and adversarial character:

The need to achieve the greatest possible degree of compliance by the widest possible range of parties has resulted in the emergence of tailor-made procedures that assess parties' compliance with their treaty commitments, and provide for a range of measures to facilitate or compel compliance (see Chapter 43 ‘Compliance Procedures’). In general, these compliance processes combine pragmatic and legal elements. The compliance bodies usually are comprised of government representatives rather than independent experts, in contrast to the human rights field. And their objective is not so much to determine state responsibility, and impose remedies, as to make the regime more effec-
tive in the future, by determining why a country is not complying and helping it to do better. Against this backdrop, their formal legal status seems to be of secondary importance. Significantly, although the non-legally binding nature of these compliance procedures helps make them acceptable to treaty parties, it does not appear to make them any less effective than binding measures might be.

7 Conclusion: Is International Environmental Law a Distinct Field?

Given the development of new types of concerns, new actors, and new standard-setting and compliance processes, it is no exaggeration to say that international environmental law has emerged as a distinct field. This distinctiveness is reflected in the very terminology of international environmental law, which speaks of commitments rather than 'obligations', 'non-compliance' rather than 'breach', and 'consequences' rather than 'remedies' or 'sanctions'. Is this distinctiveness cause for celebration or concern? Does it serve to undermine the fundamental unity and coherence of international law?

As international environmental regimes, institutions, and tribunals have proliferated, some have expressed concern about threats to the coherence of international law. But the emergence of new approaches to standard setting and compliance could be viewed, instead, as an entirely appropriate response to the distinctive characteristics of international environmental problems. These problems are not only political but also physical and involve a great deal of technical complexity. They result primarily from private, rather than governmental, conduct. They are highly uncertain and rapidly changing. All of these factors mean that, to address international environmental problems, we need complex regulatory regimes, which involve more flexible and dynamic standard-setting processes, and we need to take a pragmatic and forward-looking approach.

International environmental regimes have led to new types of normative development, blurring the distinction between legally binding and non-legally binding norms, public and private standard setting, and international and domestic law. Indeed, as these other distinctions have blurred, the distinction between legal scholarship and non-legal scholarship has itself blurred in international environmental law. There is tremendous interaction between scholars from different fields, which is why the Handbook includes a section examining other disciplinary perspectives, and why about a quarter of its authors do not have a legal background.

Are the new features of international environmental law unique to this field? Of course not. International environmental law, however, more than other areas of international law has adapted to significant societal changes, which are associated with the processes of globalization, and emphasize the relationships of inter-dependence across the globe. Perhaps most importantly, international environmental law has had to find ways of accommodating the distinct interests of a large variety of states and other actors, whose participation in international environmental regimes, albeit in different ways, is crucial if environ-
mental problems are to be addressed with at least some measure of success. International environmental law has by no means addressed all the attendant challenges successfully, as critical contributions to this Handbook illustrate. So there may well be the potential for fertilization—in both directions—between international environmental law and other fields of international law. However, in thinking about such possibilities of cross-fertilization, it is important to identify first what is new and distinctive about international environmental law rather than to see it as simply a continuation of the past. The aim of this Handbook is to assist in this task.

**Recommended Reading**


**Notes:**


(2) See, e.g., the 1909 Treaty between the United States and Great Britain Respecting Boundary Waters between the United States and Canada, which also established the International Joint Commission to deal with transboundary water issues.


(9) See the list of general reading at the end of this chapter.


(14) See list of general reading at the end of this chapter.


(16) This terminology apparently was not intended to qualify the polluting state's duty to avoid significant transboundary harm (see Chapter 22 ‘Transboundary Impacts’).
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(17) Trail Smelter Case (United States v. Canada), Award, 1941, 3 U.N.R.I.A.A. 1905.


(19) See Bering Fur Seals Arbitration, note 1 above.

(20) See, e.g., B. Koremenos, C. Lipson, and D. Snidal, eds., ‘The Rational Design of International Institutions’ (2005) 55 Int’l Org. 761. To the extent that states behave rationally to pursue their interest in mutual cooperation, this literature not only helps us understand how institutions should be designed but also helps to explain how international institutions are in fact designed.


(26) UN General Assembly Resolution 37/7 (1982).


(28) For example, the prior informed consent procedures for hazardous substances, which were originally developed in the UNEP’s Cairo and London guidelines, served as the basis for the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.


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