6

Pollution

Ashes of Death

When the Japanese fishing craft *Lucky Dragon* (*Fukuryu Maru*) reached Tokyo Bay on March 14, 1954, the entire crew and 4,000 pounds of tuna onboard were dangerously radioactive. Two weeks earlier, the United States had conducted the first detonation of a hydrogen bomb at Bikini Atoll in the Marshall Islands, deep in the South Pacific.[1] The US Atomic Energy Commission (AEC) had previously announced plans to use the islands as a testing ground for nuclear weapons, and it had advised foreign governments to keep ships outside a 50,000-square-mile "danger area" for their safety. This designated danger area proved to be woefully inadequate. The magnitude of the hydrogen bomb's thermonuclear explosion more than doubled scientific projections, and due to an unforeseen shift in atmospheric conditions, the resulting radiation cloud traveled outside the official danger area to drop a "ghostly white rain, thick with ash" on the *Lucky Dragon*.[2] When the rain subsided, crew members experienced dizziness, vomiting, and fever – the first visible symptoms of severe radiation exposure. By the time the *Lucky Dragon* returned to Japan, most of the crew suffered from headaches, skin burns, bleeding gums, and other afflictions.[3] Six months later, crew member Aikitchi Kuboyama died, and twenty-two others continued to receive hospital treatment for serious injuries.[4] Reflecting on Kuboyama's

[1] At the time of the nuclear test, the Marshall Islands were a UN trusteeship under the United States' administrative authority.

[2] David Ropeik, 'How the Unlucky Lucky Dragon Birthed an Era of Nuclear Fear', Bull. of the Atomic Scientists, 28 February 2018.

[3] Ibid.

[4] Emmanuel Margolis, 'The Hydrogen Bomb Experiments and International Law' (1955) 64 YLJ 629, 637–638; Myers S. McDougal and Norbert A. Schlei, 'The Hydrogen Bomb Tests in Perspective: Lawful Measures for Security' (1955) 64 YLJ 648, 651–652. Many Americans and Marshallese on islands outside the designated danger zone also reported

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untimely passing, a Japanese newspaper inquired, "Has the death of a citizen ever been watched by so many eyes? They are the eyes of a strong anger and protest against the 'ashes of death.'"[5]

The botched nuclear test at Bikini Atoll was among the first in a series of highly publicized environmental disasters that fixed the world's attention on the growing threat of transboundary pollution. In 1967, the *Torrey Canyon*, an American-owned and chartered tanker manned by an Italian crew, attracted international infamy when it ran aground on the Seven Stones reef in international waters. Approximately 80,000 tons of crude oil spilled into the Atlantic, befouling resort beaches and decimating sea bird populations along the coast of Cornwall, England.[6] A decade later, another oil spill eclipsed the *Torrey Canyon* incident when the *Amico Cadiz*, an American-owned supertanker, collided with a submerged reef and broke in half, dropping nearly all of its 230,000-ton load of crude oil to contaminate the French coastline for hundreds of miles. The year 1986 brought two environmental calamities in quick succession: the Chernobyl nuclear meltdown near Kyiv, Ukraine, which scattered its own "ashes of death" and eventually radiation throughout Europe, and the Sandoz chemical plant fire in Switzerland that sent thousands of liters of highly toxic pesticides down the Rhine to poison wildlife and drinking water in Germany, France, and the Netherlands. In each of these incidents, pollution from one state traversed international borders to inflict grave harm.

Like international disputes over the apportionment of watercourses and fisheries, transboundary pollution presents a classic clash of sovereign entitlements. On the one hand, international law gives states sovereign authority over activities within their territorial jurisdiction – including activities that produce pollution. But on the other hand, international law also entitles states to territorial integrity.[7] This means states are entitled to demand the cessation of transboundary pollution that causes significant harm within their borders.[8]

radiation-related injuries from the test. Margolis, 'The Hydrogen Bomb Experiments', p. 637.

[5] Ropeik, 'How the Unlucky Lucky Dragon Birthed an Era of Nuclear Fear'.

[6] Ved P. Nanda, 'The Torrey Canyon Disaster: Some Legal Aspects' (1967) 44 *Denver L. Rev.* 400, 400–401.

[7] UN Charter art. 2(4).

[8] Tamar Meshel, 'Swimming Against the Current: Revisiting the Principles of International Water Law in the Resolution of Fresh Water Disputes' (2020) 61 HILJ 135, 140 ("The no

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The unilateralist theory of sovereignty would resolve this tension, for all intents and purposes, in favor of the state where transboundary pollution originates. Recall that under the unilateralist theory, states may decide how to exercise their sovereign powers without regard to foreign interests. Accordingly, the unilateralist theory would empower states to engage in practices, such as atmospheric nuclear testing, that generate harmful transboundary pollution. The unilateralist theory would threaten to render illusory the sovereign right to territorial integrity because the enjoyment of the right would depend on the mercy or grace of other states. The "no significant harm" principle from international environmental law would be subordinated to the originating state's discretion. In an international legal order based on unilateral sovereignty, strong states would be free to do as they please within their borders, while weak states would "suffer what they must."[9]

International environmental law rejects this vision of sovereign unilateralism, embracing an equitable approach that respects and reconciles states' sovereign interests. Although states have exclusive authority to regulate pollution within their borders, international law requires them to exercise this authority in a manner congenial to other states' territorial integrity. The primary mechanism for achieving this reconciliation is the requirement that states must exercise due diligence to prevent activities in their territory from producing significant transboundary harm.

This chapter shows how due diligence leads to mandatory cooperation. To satisfy the due diligence standard, states must take into account foreign interests when they regulate activities that may produce transboundary harm. Due diligence also imposes procedural obligations to conduct environmental impact assessments, provide notice to states that may be impacted by transboundary pollution, engage in meaningful consultation and negotiation, and resolve disputes through mediation, arbitration, adjudication, or other third-party dispute resolution. The requirements of mandatory cooperation thus apply to transboundary pollution under international law.

significant harm principle prohibits states from using their territory in such a way as to cause significant harm to another state.").

[9] Thucydides, *History of the Peloponnesian War* (London, J. M. Dent; New York, E. P. Dutton, 1910) bk. 5, ch. 89 (431–404 BC) (claiming that right exists only among equals, "while the strong do what they can and the weak suffer what they must").

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Good Neighbors

Less than ten miles north of the Canada-US border lies Trail, a modest mining town in British Columbia. For over a century, Trail has hosted the world's largest zinc and lead smelter, a sprawling complex adjacent to the Columbia River. Celebrated as "the jewel of the British Columbian mining industry," the Trail smelter has served as a "locus of regional growth, a pillar of provincial development, and an instrument of Canadian economic policy."[10] For environmentalists and international lawyers, Trail has also become synonymous with industrial pollution. In the late 1920s, the Trail smelter provoked international controversy when it became apparent that the sulfur dioxide fumes emitted in prodigious quantities from its 409-foot smokestack were devastating timber lots, orchards, gardens, pastures, and farmland in neighboring Washington State.[11] Aggrieved American homesteaders demanded that the smelter cut back its emissions to protect them from further harm. When private negotiations between the smelter and the homesteaders stalled, attention shifted toward international diplomacy. Canada and the United States eventually concluded a bilateral treaty, which provided for the smelter to compensate private claimants for harm incurred before 1932 while referring questions about subsequent injuries to arbitration.

The arbitral tribunal delivered its final decision in 1941. Citing national court decisions that held sovereigns responsible for private transboundary pollution, the tribunal reasoned that "under the principles of international law . . . no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence."[12] This affirmation of the prohibition against transboundary pollution has become a canonical cornerstone of international environmental law.[13]

[10] James R. Allum, '"An Outcrop of Hell": History, Environment, and the Politics of the Trail Smelter Dispute', in Rebecca M. Bratspies and Russell A. Miller (eds.), *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (Cambridge: Cambridge University Press, 2006), pp. 13, 18.

[11] Trail Smelter Case (US v. Can.), 3 RIAA 1905, 1917 (Trail Smelter Arb. Trib. 1941); Allum, 'An Outcrop of Hell', pp. 14–15.

[12] Trail Smelter, p. 1965.

[13] Daniel Bodansky, Jutta Brunnée and Ellen Hey, 'International Environmental Law: Mapping the Field', in Daniel Bodansky et al. (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), pp. 1, 9.

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Trail Smelter envisions an international legal order in which states must interact as good neighbors, consistent with principles of equity and sovereign equality.[14] As Günther Handl has explained,

> the notion of "neighborliness" simply implies that the exercise of sovereign territorial rights, as indeed of any rights, cannot be separated from the social context in which the rights are being asserted and that it is only in the concrete circumstances of a specific situation that rights may find their exact delimitation. From this it follows logically that where, in the context of an international society based on the sovereign equality of states, the exercise of a sovereign right . . . conflict[s] with similar rights of an equal rank, insistence on individual rights must be considered unreasonable and reprehensible [as an abuse of right].[15]

Being a good neighbor, in this sense, means states must live with some inconveniences that are inevitable features of communal life. It would be unreasonable, for example, to expect states to exercise such complete control over their territory as to eliminate all risk of transboundary harm. But being a good neighbor also means that states may not simply play territorial sovereignty as a trump card to avoid taking responsibility for serious transboundary harm. They must exercise due diligence, using the resources at their disposal – including legal regulation – to ensure that dangerous activities do not inflict significant injury abroad. When transboundary harm does occur, they must take steps to curtail further injury and provide compensation.[16] These obligations are necessary to respect the principle of sovereign equality under international law.

Elementary Considerations of Humanity

Canada and the United States used the *Trail Smelter* arbitration to bolster their shared commitment to good neighborly relations. However, the legal principles articulated in *Trail Smelter* would soon receive broader application when the ICJ extended these principles to a dispute between embittered geopolitical adversaries on the other side of the Atlantic.[17]

On October 22, 1946, two British destroyers struck submerged mines in the Corfu Channel off the coast of Albania. The ensuing blast caused

[14] Linda J. Pike, 'Neighbor States', in *Max Planck Encyclopedia of Public International Law vol. 10* (Amsterdam: Elsevier North Holland, 1988), pp. 311, 311–312.
[15] Günther Handl, 'Territorial Sovereignty and the Problem of Transnational Pollution' (1975) 69 AJIL 50, 56.
[16] Trail Smelter, pp. 1965–1966.
[17] Corfu Channel Case (UK v. Alb.), 1949 ICJ Rep. 4 (9 April).

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major damage to the destroyers and claimed the lives of over three dozen crew members. The incident marked the culmination of a series of tense standoffs between Albania and the United Kingdom, which had squared off on opposite sides of the nascent Cold War. Earlier the same year, an Albanian battery had fired in the direction of two British cruisers passing through the channel without connecting. The British made a formal diplomatic protest and, in further defiance, sent four warships steaming through the channel. When two of these ships – the *Saumarez* and the *Volage* – struck mines, suffering casualties and major damage, the United Kingdom initiated proceedings against Albania in the ICJ.[18]

A central question in the *Corfu Channel Case* was whether Albania could be held responsible for the mine blasts. The United Kingdom did not offer any direct evidence to establish that Albania had planted the mines in the channel.[19] Nonetheless, the Court concluded that Albania must pay compensation for the United Kingdom's injuries due to a combination of factors. First, by all accounts, the minefield had been laid in Albanian territorial waters not long before the deadly explosions. Second, during the relevant period, Albania exercised exclusive jurisdiction and continuous oversight over the waters, such that the mines could not have been placed without its knowledge.[20] Third, Albania did not warn the United Kingdom about the minefield.[21] Under these circumstances, the Court concluded, Albania had a duty to warn the United Kingdom of the impending danger. Albania's duty to provide notice rested "on certain general and well-recognized principles, namely: elementary considerations of humanity, even more exacting in peace than in war; the principle of the freedom of maritime communication; and every State's obligation not to allow knowingly its territory to be used for acts contrary to the right of other States."[22] Having failed to notify the United Kingdom that its navy risked serious harm by traversing the Corfu Channel, Albania assumed legal responsibility for injuries suffered by the *Saumarez*, the *Volage*, and their crews.

By holding that Albania was obligated to provide notice of threats emanating from its territory, the ICJ took a substantial step toward mandatory cooperation. The *Corfu Channel* judgment gave states like Albania a choice: either eliminate serious dangers themselves

[18] The ICJ upheld the United Kingdom's right to innocent passage. See ibid. pp. 29–32.
[19] Ibid. p. 17.
[20] Ibid. pp. 18–19.
[21] Ibid. pp. 19–20.
[22] Ibid. p. 22.

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(e.g., by removing submerged mines) or cooperate with other states (e.g., by consenting to foreign minesweeping). In either scenario, states could not act without regard to foreign interests. They must take actions reasonably calculated to prevent serious harm to other states, including by affirmatively warning other states of dangers. As the ICJ recognized in *Corfu Channel*, these minimal requirements to suppress serious threats and provide notice to other states are necessary to respect "elementary considerations of humanity" and honor other states' equal rights.

Cooperating for Environmental Conservation

States cannot satisfy their due diligence obligations in many contexts without robust cooperation. Consider again the *Trail Smelter* dispute. In theory, Canada could have shut down the Trail smelter, but this would have delivered a crushing blow to the British Columbian mining industry. Economic and political considerations dictated that Canadian regulators should pursue an intermediate solution, setting emissions standards at levels that would maximize the smelter's capacity for zinc and lead production without inflicting serious harm across the border in violation of international law. But how much would the smelter have to reduce its emissions to achieve this objective? To answer this question, Canadian regulators would have to conduct a rigorous environmental impact assessment, taking into account wind patterns, terrain, flora, fauna, human settlement, and other factors on the American side of the border. Collecting this information would require the United States' cooperation. Canada could not realistically satisfy its obligation to regulate harmful transboundary pollution from the smelter without consulting and exchanging information with the United States.

Due diligence also constrained how Canada could handle US objections to its governance of the Trail smelter. As noted above, Canada accepted responsibility for the smelter's adverse environmental impacts in the 1920s and early 1930s. Nonetheless, Canada continued to resist the United States' requests to make even more aggressive cuts to the smelter's pollution. The dispute between the two states centered partly on scientific uncertainty about the smelter's environmental impact under various atmospheric conditions. However, Canada and the United States also disagreed about what level of harm would be serious enough to trigger the duty to prevent significant harm. Given the indeterminacy of "significant harm" and the triggering conditions of the duty, due diligence required Canada to strive in good faith to pursue further consultation,

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negotiation, or third-party dispute resolution, such as an independent fact-finding commission, mediation, arbitration, or adjudication. By cooperating with the United States to resolve their factual and legal disagreements in the Court of Arbitration, Canada satisfied the due diligence standard.

The Trail smelter controversy thus illustrates how, in practice, the duty to prevent transboundary harm may generate cooperation that satisfies the due diligence requirements of the prevailing regime of mandatory cooperation. To satisfy the due diligence standard, states must make a reasonable, good-faith effort to investigate risks of significant transboundary harm. They must notify, exchange information, and consult, negotiate, and accept third-party dispute resolution with other states. Only by taking these kinds of steps can they demonstrate due regard for other states' equal sovereignty and avoid an impermissible abuse of right.

Codifying Mandatory Cooperation

Within the past half-century, mandatory cooperation has become deeply embedded in international environmental law. In June 2022, the international community celebrated the fiftieth anniversary of the first global summit on environmental conservation: the UN Conference on the Human Environment, held in Stockholm, Sweden, June 5–16, 1972. A crowning achievement of the Stockholm Conference was its landmark declaration enshrining "common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment."[23] The Stockholm Declaration recognizes the need for "extensive cooperation among nations and action by international organizations in the common interest."[24] Although the Stockholm Declaration does not spell out precisely which forms of international cooperation are essential, it does affirm that states have a "responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."[25]

After the Stockholm Conference, the international community elaborated duties of cooperation for environmental conservation in a series of treaties, declarations, and other instruments. That same year, the UN

[23] Declaration of the United Nations Conference on the Human Environment, Stockholm, 16 June 1972, 11 ILM 1416, pmbl. [hereinafter Stockholm Declaration].
[24] Ibid. pmbl. para. 7.
[25] Ibid. Principle 21.

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General Assembly recognized that international cooperation for the environment, as contemplated in the Stockholm Declaration, demanded that states exchange technical data related to transboundary pollution "in the best spirit of co-operation and good-neighborliness."[26] In 1979, the UN Economic Commission for Europe's (UNECE) Long Range Transboundary Air Pollution Agreement (LRTAP) committed member-states to combat air pollution by exchanging information, consulting, and pursuing collaborative research to identify and eliminate significant threats.[27] Under LRTAP's cooperative framework, member states have subsequently established additional protocols to combat some of the most deadly atmospheric pollutants, including sulfur, nitrogen, and volatile organic compounds.[28] UNECE's 1992 Convention on Transboundary Effects of Industrial Accidents also obligates states to identify risks of transboundary harm from industrial accidents, share relevant information, and consult with one another to develop effective prevention and mitigation strategies.[29] When accidents occur, states-parties must notify other interested states, assess transboundary harm, and solicit assistance to address the harm.[30]

Mandatory cooperation also features prominently in treaties addressing oceanic pollution, including the 1982 UN Convention on the Law of the Sea (UNCLOS).[31] In addition to requiring states-parties to prohibit and penalize pollution of the marine environment, UNCLOS demands that they cooperate to prevent significant oceanic pollution and eliminate or reduce its adverse effects on the marine environment.[32] When

[26] Cooperation Between States in the Field of the Environment, 15 December 1972, UNGA Res. 2995 (XXVII), A/RES/2995, paras. 2–3.

[27] Long-Range Transboundary Air Pollution Agreement, Geneva, 13 November 1979, 18 ILM 1442, arts. 3–5, 7–9, 13 [hereinafter LRTAP]. The UNECE's membership draws from Eastern and Western Europe, Canada, and the United States.

[28] See, e.g., 1985 Helsinki Protocol on the Reduction of Sulphur Emissions or Their Transboundary Fluxes by at Least 30 Per Cent, Helsinki, 8 July 1985, 27 ILM at 698 (sulfur); 1991 Geneva Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes, Geneva, 18 November 1991, 31 ILM at 569 (VOCs).

[29] Convention on the Transboundary Effects of Industrial Accidents, Helsinki, 17 March 1992, UN/E/ECE/1268, arts. 3–4.

[30] Ibid. arts. 10–12; see also UN Environment Programme, Basel Convention the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Basel, 22 March 1989, 1673 UNTS 126, arts. 6, 10, 13 [hereinafter Basel Convention] (requiring states to provide timely notice, exchange information, and consult with other states before shipping hazardous wastes into foreign territory).

[31] UN Convention on the Law of the Sea, 10 December 1982, 1833 UNTS 3.

[32] Ibid. arts. 199, 207–211.

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states-parties become aware of imminent dangers to the marine environment, they must immediately notify other states that are likely to be impacted.[33] In addition, states-parties are obligated to cooperate in "promoting studies, undertaking programmes of scientific research and encouraging the exchange of information and data acquired about pollution of the marine environment" to assess better "the nature and extent of pollution, exposure to it, and its pathways, risks and remedies."[34] They must conduct environmental impact assessments for pollution of the marine environment,[35] and they must cooperate to formulate and elaborate international rules, standards, and best practices for protecting the marine environment.[36] Similar cooperative obligations appear in other treaties that address marine pollution.[37] Based on these developments in treaty law and consistent state practice, the International Tribunal for the Law of the Sea (ITLOS) has characterized mandatory cooperation as "a fundamental principle in the prevention of pollution of the marine environment under . . . general international law."[38]

Another important codification of mandatory cooperation is the Convention on Environmental Impact Assessment in a Transboundary Context, the product of a UN-sponsored conference in Espoo, Finland (Espoo Convention).[39] The Espoo Convention requires states-parties to provide notice of activities that are likely to cause a significant adverse transboundary impact.[40] They must also conduct environmental impact assessments for such activities, consult with other interested states regarding preventing or mitigating transboundary harms, and provide mutual assistance in eliminating or reducing such harms.[41] When states-parties decide whether to proceed with an activity that may have transboundary impacts, they must take "due account" of the likely effect on

[33] Ibid. art. 198.
[34] Ibid. art. 200.
[35] Ibid. arts. 204–206.
[36] Ibid. art. 197.
[37] Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 29 December 1972, 1340 UNTS 61, art. 12 [MARPOL Convention]; Convention for the Protection of the Mediterranean Sea Against Pollution, 16 February 1976, 1102 UNTS 27, arts. 9–11.
[38] MOX Plant Case (Ireland v. UK), Provisional Measures, ITLOS Case No. 10, 3 December 2001, 41 ILM 405, 416, para. 89 (2002).
[39] Convention on Environmental Impact Assessment in a Transboundary Context, 25 February 1991, 1989 UNTS 310 (1997). As of January 2024, the Espoo Convention's membership currently included the European Union and 44 other states-parties.
[40] Ibid. art. 3.
[41] Ibid. arts. 4–5.

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other states.[42] Final decisions must be communicated to other states in writing, explaining the reasons and considerations on which decisions are based.[43] If other states object, states-parties must pursue further consultations to consider alternative courses of action.[44] The Espoo Convention thus offers a detailed roadmap for international cooperation concerning transboundary pollution.[45]

In 2008, the UN International Law Commission (ILC) incorporated central features of this burgeoning treaty practice into its Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities (Draft Articles).[46] Consistent with *Trail Smelter* and *Corfu Channel*, the Draft Articles provide that states must "take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof," and they characterize this obligation as "one of due diligence."[47] In addition, the Draft Articles demand that states cooperate by providing notice of possible transboundary harm, transmitting relevant technical information about risks, and consulting with one another to "seek solutions based on an equitable balance of interests."[48] If consultations do not lead to an agreed solution, the state of origin may decide how to proceed, but it must account for the interests of other states.[49] As the ILC has recognized, this approach to transboundary harm draws inspiration from the *Lake Lanoux Case* discussed in Chapter 2. Like *Lake Lanoux*, the Draft Articles respect territorial jurisdiction by denying potentially affected states veto power over activities outside their territory. But the Draft Articles also guard against the abuse of territorial sovereignty by requiring states to exercise due diligence to stop activities

[42] Ibid. art. 6(1).
[43] Ibid. art. 6(2).
[44] Ibid. art. 6(3).
[45] A year after completion of the Espoo Convention, the UN Conference on Environment and Development endorsed these requirements in the 1992 Rio Declaration. Report of the United Nations Conference on Environment and Development, 12 August 1992, A/CONF.151/26/Rev.1 (vol. 1), Principles 18–19.
[46] Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities, with Commentaries, Rep. of the Int'l Law Comm'n on the Work of its Fifty-Third Session, UN Doc. A/56/10, pp. 370–377 (2001).
[47] Ibid. art. 3 & cmt. 7.
[48] Ibid. arts. 4, 8–10, 12. In commentary accompanying the Articles, the ILC explains that this cooperation is necessary, in part, because states likely to be affected by transboundary harm "may know better than anybody else ... which features of the activity may be damaging to it, or which zones of its territory close to the border may be affected by the transboundary activity, such as a specially vulnerable ecosystem." Ibid. art. 4, cmt. 1.
[49] Ibid. art. 9(3).

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within their jurisdiction from generating significant transboundary harm.[50] When disputes arise concerning these requirements, the Draft Articles contemplate that states may convene an impartial fact-finding commission or they may settle their disputes through other "peaceful means . . . chosen by mutual agreement," such as negotiation, mediation, conciliation, arbitration, or adjudication.[51]

Cooperating through Courts and Tribunals

In recent years, international courts and tribunals have applied mandatory cooperation to transboundary pollution in a variety of settings. The most important and influential case is the ICJ's 2010 judgment in a dispute concerning Uruguay's construction of pulp mills on the River Uruguay.[52] Decades earlier, Argentina and Uruguay had concluded a bilateral treaty establishing detailed rules to govern the river's use and environmental conservation, and they had established the Administrative Commission of the River Uruguay (CARU) to facilitate conciliation and judicial settlement of disputes.[53] They also agreed to prepare environmental impact assessments for projects that might impact the river's water and work through CARU to notify the other party, exchange relevant information, and consult and negotiate over any unresolved concerns.[54] Uruguay took significant steps to comply with these requirements before proceeding with plans to build two pulp mills: it prepared preliminary environmental impact assessments, delivered these assessments to CARU for review, and engaged in consultations with Argentina. Uruguay began constructing the mills, however, before Argentina had a reasonable opportunity to study the possible environmental impacts and before differences between the two states had been resolved.

Fearing significant pollution to the Uruguay River, Argentina initiated proceedings in the ICJ. Argentina asked the ICJ for a judgment that Uruguay had violated the 1975 Statute by proceeding with construction of the two pulp mills without sufficient bilateral cooperation to ensure the river's environmental conservation. The Court agreed

[50] Ibid. art. 9, cmt. 10.
[51] Ibid. art. 19.
[52] Case Concerning Pulp Mills on the River Uruguay, 2010 ICJ Rep. 14 (20 April).
[53] Ibid. p. 32, paras. 26–27 (discussing art. 7 of the treaty concluded between Argentina and Uruguay, Montevideo, 7 April 1961, 635 UNTS 9074, p. 98, and the Statute of the River Uruguay, 26 February 1975, 1295 UNTS No. I-21425, p. 340).
[54] Ibid. pp. 49–51, para. 80.

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> that the procedural obligations of informing, notifying and negotiating constitute an appropriate means, accepted by the Parties, of [ensuring environmental conservation under the 1975 Statute]. These obligations are all the more vital when a shared resource is at issue, as in the case of the River Uruguay, which can only be protected through close and continuous co-operation between the riparian States.[55]

Citing *Corfu Channel*, the Court linked these procedural duties to "the principle of prevention," which, "as a customary rule, has its origins in the due diligence that is required of a State in its territory."[56] Uruguay's failure to provide timely notice before authorizing construction was significant, in the Court's opinion, because "the obligation to notify is intended to create the conditions for successful co-operation between the parties, enabling them to assess the plan's impact on the river on the basis of the fullest possible information and, if necessary, to negotiate the adjustments needed to avoid the potential damage that it might cause."[57] Until this consultation and negotiation had concluded, Uruguay was obligated to withhold its authorization for construction; otherwise, "the negotiations between the parties would no longer have any purpose."[58] Ultimately, however, because Argentina had not presented any conclusive evidence showing that Uruguay's pulp mills threatened substantial harm to Argentina, the Court declined Argentina's request to grant compensatory damages and order the closing of the pulp mills.[59] Instead, the Court concluded its judgment by simply affirming that Uruguay had violated its obligations of mandatory cooperation and reminding the parties of their continuing "duty to co-operate with each other" to prevent future pollution.[60] Thus, *Pulp Mills* cleared the way for Uruguay to continue constructing and operating the disputed pulp mills while encouraging continued cooperation with Argentina through CARU.[61]

[55] Ibid. p. 51, para. 81.
[56] Ibid. p. 55, para. 101; see also ibid. p. 83, para. 204 (observing that "due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised, if a party planning works liable to affect the régime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works").
[57] Ibid. p. 58, para. 113.
[58] Ibid. p. 68, paras. 144–149.
[59] Ibid. pp. 102–105, paras. 267–280.
[60] Ibid. pp. 105–106, para. 281.
[61] Alan Boyle and Catherine Redgwell, *Birne, Boyle & Redgwell's International Law and the Environment*, 4th ed. (Oxford: Oxford University Press, 2021), p. 206.

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Although *Pulp Mills* involved legal duties enshrined in a bilateral treaty, international courts and tribunals have recognized that the obligation to cooperate in addressing transboundary pollution applies to the entire international community as a general requirement of customary international law. For example, in the *Case Concerning Land Reclamation by Singapore in and Around the Straits of Johor* (*Land Reclamation*),[62] an ITLOS tribunal characterized the duty to cooperate in preventing transboundary environmental harm as a "fundamental principle" not only under UNCLOS but also under "general international law."[63] At issue in the case was Malaysia's challenge to Singapore's efforts to expand its territory by reclaiming land from the Straits of Johor.[64] Malaysia argued that the project would degrade the marine environment in the straits by adversely impacting the usual patterns of coastal erosion, sedimentation, and water flow through the straits. Malaysia also challenged Singapore's failure to provide notice, exchange information, and consult and negotiate with Malaysian authorities as required under UNCLOS. While the proceedings were pending, the parties managed to resolve their differences by agreeing to jointly sponsor an environmental impact assessment by an independent body.[65] Singapore also agreed to share relevant information, consult with Malaysian authorities, consider their views, and negotiate toward a mutually acceptable resolution.[66] Accordingly, by the time the tribunal was ready to rule on Malaysia's claims, the parties had already reached a mutually acceptable path forward consistent with their duties of mandatory cooperation under customary international law. All that remained was for the ITLOS tribunal to incorporate the parties' agreement into its October 2003 order granting provisional measures.[67]

In other proceedings, the ICJ has agreed that under customary international law, the requirements of mandatory cooperation apply to all

[62] Case Concerning Land Reclamation by Singapore in and Around the Straits of Johor (Malaysia v. Singapore) (Provisional Measures), 8 October 2003, ITLOS_F3–F4_6–64, p. 10, paras. 76–78, 92.

[63] Ibid. p. 25, para. 92 (quoting MOX Plant Case, para. 82).

[64] Ibid. p. 10, paras. 76–78, 92.

[65] Ibid. p. 25, para. 86.

[66] Ibid. p. 23, paras. 76–78; ibid. p. 24, para. 85. Malaysia indicated that it was prepared to accept these assurances if the tribunal incorporated them into the formal record. Ibid. p. 23, para. 79.

[67] Ibid. pp. 27–28, para. 106(1). In the meantime, the tribunal unanimously directed "Singapore not to conduct its land reclamation in ways that might cause irreparable prejudice to the rights of Malaysia or serious harm to the marine environment, taking especially into account the reports of the group of independent experts." Ibid. p. 28, para. 106(2).

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states in disputes concerning significant transboundary harm. In *Certain Activities Carried Out by Nicaragua in the Border Area* (*San Juan River*), Costa Rica and Nicaragua each claimed that the other had violated international law by failing to conduct an environmental impact assessment for works undertaken along the San Juan River.[68] Costa Rica faulted Nicaragua for not undertaking a sufficiently robust environmental impact assessment before commencing a dredging project in the San Juan that might cause harm to the Colorado River and vulnerable wetlands within Costa Rica's borders.[69] Nicaragua counterclaimed that Costa Rica had failed to conduct an environmental impact assessment for a road it had constructed alongside the river.[70] Quoting *Pulp Mills*, the Court agreed with the parties that the obligation to undertake an environmental impact assessment for activities that risk transboundary harm "may now be considered a requirement under general international law" that applies even without a binding treaty.[71] Nicaragua satisfied this obligation by undertaking a preliminary assessment before beginning its dredging project, the Court concluded,[72] but Costa Rica violated international law by failing to undertake an environmental impact assessment before building the road.[73]

In sum, *Pulp Mills*, *Land Reclamation*, and *San Juan River* illustrate how mandatory cooperation can facilitate peaceful dispute resolution in accordance with equitable principles. When states conduct environmental impact assessments, notify one another of ecological risks, and share other relevant information, they can better understand the harmful impacts of transboundary pollution and develop more effective prevention and mitigation strategies. Through negotiation and third-party dispute resolution, they can reach solutions that equitably accommodate their respective rights and interests.

[68] Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua), 2015 ICJ Rep. 665, 705, 719, paras. 101–102 (16 December).
[69] Ibid. p. 705, para. 102.
[70] Ibid. p. 719, para. 146.
[71] Ibid. p. 706, para. 104 (quoting Judgment, ICJ Rep. 2010 (I), p. 83, para. 204).
[72] Ibid. p. 707, para. 105.
[73] Ibid. p. 721, para. 156; p. 723, para. 162. The Court concluded that because no environmental impact assessment had been undertaken, it was not necessary to address whether Costa Rica had also violated general international law by failing to notify or consult with Nicaragua about the road project. Ibid. p. 724, para. 168.

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Catalyzing Environmental Cooperation

At the opening session of the 1972 Stockholm Conference, Secretary-General Maurice Strong declared that the Conference's aim was "to reconcile man's legitimate, immediate ambitions with the rights of others, with respect for all life supporting systems, and with the rights of generations yet unborn."[74] Strong explained that the Stockholm Declaration "holds that all nations must accept responsibility for the consequences of their own actions on environments outside their borders," and he asserted that "it is essential that this fundamental principle be accepted here if we are to establish a minimum basis for effective international cooperation following this conference."[75] As Strong correctly perceived, and as this chapter has shown, there is a vital link between state responsibility to prevent transboundary pollution, on the one hand, and international cooperation for environmental protection, on the other. States cannot satisfy their due diligence obligations with respect to transboundary pollution unless they also embrace international cooperation. Put another way, cooperation is necessary for international law to govern transboundary pollution. Once states recognized in Stockholm that they must prevent transboundary pollution, it followed that they would also have to share information, consult, negotiate, and accept third-party dispute resolution to ensure their efforts were effective. Cooperation thus became mandatory under international environmental law.[76]

These developments have transformed global governance. As this chapter has shown, states have enshrined the requirements of mandatory cooperation in international environmental treaties; the ILC has endorsed mandatory cooperation in its *Draft Articles on Transboundary Harm*; and international courts and tribunals have applied the requirements of mandatory cooperation as customary international law. There is no longer any serious doubt that international law obligates states to cooperate with one another to ensure that activities within their jurisdiction do not introduce

[74] Maurice F. Strong, 'Opening Statement, Stockholm Conference on the Human Environment 1972', in Alon Tal (ed.), *Speaking of Earth: Environmental Speeches that Moved the World* (New Brunswick: Rutgers University Press, 2006), p. 48.

[75] Ibid. p. 50.

[76] See Günther Handl, 'Transboundary Impacts', in Daniel Bodansky et al. (eds.), *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2007), pp. 531, 542 ("[I]t would seem undeniable that all three transboundary impact-related procedural obligations of assessment, notification, and consultation are part of present-day customary international law.").

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harmful pollution abroad. But the ramifications of mandatory cooperation for environmental protection run deeper still. Mandatory cooperation has accelerated the progressive development of international environmental law by pressing states to share information, consult, and negotiate with one another. Since Stockholm, states have concluded a host of agreements to combat transboundary pollution, including air pollution,[77] water pollution,[78] hazardous wastes,[79] and nuclear safety.[80] The rapid proliferation of environmental treaties and institutions following the Stockholm Conference reflects the new reality that states are expected to work together as committed partners to address transboundary pollution. Mandatory cooperation has become both a cornerstone of international environmental law and a powerful catalyst for the law's progressive development.

Much of the development of international environmental law consists of "soft law" instruments rather than legally binding treaties.[81] Nonbinding declarations, such as the Stockholm Declaration, the 1992 Rio Declaration on Environment and Development,[82] and the 2002 Johannesburg Declaration on Sustainable Development,[83] articulate broad principles and suggest best practices for responsible environmental stewardship. Critics sometimes dismiss such nonbinding declarations as phantom laws that compromise international law's integrity as a normative system.[84] However, reliance on soft commitments need not be viewed as a "pathological phenomenon" that enfeebles international legal order.[85] In the environmental arena, soft law instruments usually reflect serious efforts to bolster states' political commitments and practical capacities to prevent transboundary environmental harm. When these efforts are successful, they can reduce the need for binding treaties.

[77] E.g., Canada–US: Agreement on Air Quality, 13 March 1991, 30 ILM 676; ASEAN Agreement on Transboundary Haze Pollution, 10 June 2002; LRTAP.

[78] E.g., Agreement on Great Lakes Water Quality, 22 November 1978, 30 UST 1383, TIAS No. 9257; Convention on the Law of the Non-navigational Uses of International Watercourses, New York, 21 May 1997, UN Doc. A/RES/51/229, arts. 2(a), 21–23.

[79] E.g., Basel Convention.

[80] E.g., Convention on Nuclear Safety, 17 June 1994, 1963 UNTS 293, art. 7.

[81] See, e.g., International Law Association, Report of the Fifty-Second Conference, Helsinki, 14–20 August 1966, p. 477; International Law Association, Report of the Sixtieth Conference, Montreal, 1982, p. 1.

[82] Report of the UN Conference on Environment and Development, above note 45, Annex I.

[83] World Summit on Sustainable Development, Johannesburg Declaration on Sustainable Development, 4 September 2002, UN Doc. A/CONF.199/20.

[84] E.g., Prosper Weil, 'Towards Relative Normativity in International Law?' (1983) 77 AJIL 413, 414–423.

[85] Ibid. p. 416.

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To the extent states relate to each other as neighbors, they may find ways to resolve their differences through friendly cooperation based on informal norms and practices rather than resort to legal obligations and enforcement.[86] Even if treaties might be preferable in a perfect world, soft law commitments are sometimes the most robust form of normative consensus that states can achieve through diligent cooperation. Mandatory cooperation thus helps to explain and contextualize soft law's prevalence in international environmental governance, showing why it may be worth celebrating, or at least having, even as the international community continues to pursue more intensive commitments to prevent or minimize transboundary pollution.

Yet despite evident progress, the dangers of transboundary pollution have never been greater. In the next chapter, we consider how mandatory cooperation applies to the supreme existential danger of our time: atmospheric pollution and its devastating contribution to global warming. As we will see, in principle, states must exercise due diligence to prevent carbon emissions from exacerbating global warming. This obligation flows, in part, from the general duty to prevent transboundary harm. Additionally, states now accept that climate change and its adverse effects qualify as a common concern of humanity that is entrusted to the joint stewardship of the international community as a whole. Accordingly, joining the fight against climate change is no longer an option states can take up or refuse; it is mandatory under international law.

[86] Cf. Robert C. Ellickson, *Order Without Law: How Neighbors Settle Disputes* (Cambridge: Harvard University Press, 1994), p. 4 ("Neighbors in fact are strongly inclined to cooperate, but they achieve cooperative outcomes ... by developing and enforcing adaptive norms of neighborliness that trump formal legal entitlements.").

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