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Gaps in international environmental law and environment-related instruments: towards a global pact for the environment

Report of the Secretary-General

Summary

The present report has been prepared pursuant to General Assembly resolution 72/277 entitled “Towards a Global Pact for the Environment”, in which the Assembly requested the Secretary-General to submit, at its seventy-third session in 2018, a technical and evidence-based report that identifies and assesses possible gaps in international environmental law and environment-related instruments with a view to strengthening their implementation.

The report reviews and analyses the corpus of international environmental law and environment-related instruments as well as the governance structure and implementation of international environmental law. It reveals gaps and deficiencies at multiple levels.

First, there is no single overarching normative framework that sets out what might be characterized as the rules and principles of general application in international environmental law even though such principles may help unify the current, sectoral, approach to international environmental law and help fill the gaps in the rules laid out in treaties. While some principles of international environmental law are now well recognized through their incorporation into issue-specific multilateral environmental agreements and have been affirmed by a number of international courts and tribunals, others enjoy neither clarity nor judicial consensus as to their applicability, nor recognition in binding legal instruments. This has an impact on the predictability and implementation of sectoral environment regimes.

Second, international environmental law is piecemeal and reactive. It is characterized by fragmentation and a general lack of coherence and synergy among a large body of sectoral regulatory frameworks. This leads to an important deficit



in coordination at the law-making and implementation levels and a need for better policy coherence, mutual supportiveness and synergies in implementation.

Third, the articulation between multilateral environmental agreements and environment-related instruments remains problematic owing to the lack of clarity, content-wise and status-wise, of many environmental principles.

Fourth, the structure of international environmental governance is characterized by institutional fragmentation and a heterogeneous set of actors, revealing important coherence and coordination challenges. International courts and tribunals often stress the lack of international consensus concerning environmental principles.

Fifth, the implementation of international environmental law is challenging at both the national and international levels. National implementation is constrained in many countries by the lack of appropriate national legislation, financial resources, environmentally sound technologies and institutional capacities. At the international level, implementation is constrained by the lack of clarity of many environmental principles.

International environmental law and its effective implementation could be strengthened through such actions as the clarification and reinforcement of principles of international environmental law. This could be done through a comprehensive and unifying international instrument that gathers all the principles of environmental law. There should also be more effective reporting, review and verification measures and robust compliance and enforcement procedures and mechanisms, ensuring that those States that require support have adequate resources to enable them to effectively implement their commitments, and the role of non-State actors should be enhanced at multiple levels.

Building upon the creative approaches that States have thus far adopted to protect the environment, it is essential that States and the United Nations work together to address gaps in international environmental law. We must collectively seize the opportunity to use international environmental law in new and dynamic ways to provide a strong and effective governance regime with a view to better safeguarding the environment for future generations.

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I. Introduction

1. Most environmental challenges and problems and their impacts are transboundary, and some are global in nature, which led to the early recognition that international cooperation among States through appropriate legal frameworks was indispensable to the creation of effective responses and solutions. International environmental law is the area of public international law that addresses States and international organizations with respect to the protection of the environment.¹ It does not operate in isolation, but is anchored in the rules and principles of general public international law. The traditional sources of international law set out in article 38 of the Statute of the International Court of Justice have given rise to a large body of international legal obligations whose primary objective is the protection of the environment and the sustainable use of natural resources.²

2. International treaties adopted at the regional and global levels, commonly referred to as multilateral environmental agreements, are the dominant sources of international environmental law. A vast body of multilateral environmental agreements, comprising more than 500 instruments, have been adopted so far. Each agreement addresses a specific environmental challenge and is legally and institutionally distinct from the others. The incremental and piecemeal nature of international environmental law-making has resulted in a proliferation of largely sectoral regulatory regimes and a fragmented international legal framework for the protection of the environment.³ Fragmentation has become a frequent phenomenon in international law, and is one of the consequences of multilateral decision-making.

3. There is no single overarching normative framework in the area of international environmental law that sets out what might be characterized as rules and principles of general application. However, many other areas of international law have some binding framework instruments that contain general rules whose scope is broad enough to cover more specific rules and principles in sectoral or regional instruments and provide for a certain degree of coordination and coherence. Examples include the human rights covenants, international trade law and the international law of the sea. In most of these areas, however, the framework agreements codified existing customary norms and in most cases, if not all, pre-dated the development of more specific treaties. It has been noted that the fragmented structure of international environmental law and the incremental process of regime creation inevitably lead to the situation where some environmental challenges are addressed, while others are not.

4. Customary international environmental law is sparse. The existence of a rule of customary international law requires that there be a settled practice together with *opinio juris* of States (a belief that the practice is rendered obligatory by the existence

¹ See Alan Boyle and Catherine Redgwell, *International Law and the Environment*, 4th ed. (Oxford University Press, 2019); Philippe Sands and others, *Principles of International Environmental Law*, 4th ed. (Cambridge University Press, 2018); Daniel Bodansky, *The Art and Craft of International Environmental Law* (Harvard University Press, 2011); Daniel Bodansky, Jutta Brunnée and Ellen Hey, eds., *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2008).

² Sands and others, *Principles of International Environmental Law*, p. 102.

³ While the focus of the present study is on fragmentation within international environmental law, such incoherence also extends to the interaction between rules of international environmental law and those applicable to other areas of international law, such as those relating to armed conflict, a topic currently being considered by the International Law Commission (ILC) (see A/73/10, paras. 164–218).

of a rule of law requiring it).⁴ With regard to international environmental norms, the identification of rules of customary international law is a challenging task, in particular in situations where there is a gap between what States say and what they actually do.⁵ Nevertheless, existing customary rules of international environmental law have already been codified in treaties. In addition, several international courts and tribunals have confirmed the existence of rules of customary international law in the field of environmental protection.⁶

5. Owing to the critical challenges posed by environmental issues as well as the urgency of action and the difficulties inherent in reaching agreement on legally binding international instruments, an important body of non-binding instruments – declarations, resolutions, guidelines and recommendations – has emerged in international environmental law. Notable examples are the Declaration of the United Nations Conference on the Human Environment (the Stockholm Declaration) and the Rio Declaration on Environment and Development.⁷ Such non-binding instruments have acted as important guidance for national and international action and often act as precursors to the subsequent development and adoption of legally binding instruments. They are also commonly used within the framework of multilateral environmental agreements to clarify the meaning of specific provisions.

6. The normative and institutional fragmentation of international environmental law and the sectoral approach to environmental regulation have led over the years to proposals to enhance the coherence and coordination of global environmental governance, including successful proposals to enhance coordination among specific multilateral environmental agreements, and less successful proposals to establish a World Environment Organization⁸ or to adopt an international covenant on environment and development.⁹ More recently, the idea of a global pact for the environment that synthesizes and codifies the principles of international environmental law in one document was proposed.¹⁰ On 10 May 2018, the General Assembly adopted resolution 72/277, entitled “Towards a Global Pact for the Environment”, and requested that the Secretary-General submit, at its seventy-third session in 2018, a technical and evidence-based report that identifies and assesses possible gaps in international environmental law and environment-related instruments

⁴ *North Sea Continental Shelf (Federal Republic of Germany/Denmark; Federal Republic of Germany/Netherlands), Judgment, I.C.J. Reports 1969*, p. 44, para. 77; Statute of the International Court of Justice, art. 38 (1) (b); A/73/10, para. 65, conclusion 2.

⁵ See Daniel Bodansky, “Customary (and not so customary) international environmental law”, *Indiana Journal of Global Studies*, vol. 3, No. 1 (Fall 1995), p. 105.

⁶ See, for example, *The Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996*; *Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*; *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, Case No. 17, International Tribunal for the Law of the Sea Reports 2011*.

⁷ ILC has also developed a number of non-binding instruments (further referred to below) concerning aspects of international environmental law and matters related thereto.

⁸ See for example, Frank Biermann, “The emerging debate on the need for a world environment organization”, *Global Environmental Politics*, vol. 1, No. 1 (February 2001); Daniel C. Esty, “The case for a global environmental organization”, in Peter B. Kenen, ed., *Managing the World Economy: Fifty Years After Bretton Woods* (Institute for International Economics, 1994).

⁹ See International Union for Conservation of Nature and Natural Resources, *Draft International Covenant on Environment and Development: Implementing Sustainability*, 5th ed. (2015) (IUCN Draft Covenant).

¹⁰ See “Global pact for the environment”, preliminary draft, 24 June 2017, available at <https://perma.cc/L4PM-PTV2>; Le club des juristes, *White Paper: Global Pact for the Environment* (2017).

with a view to strengthening their implementation. The present report has been prepared pursuant to that request.

7. The report identifies and assesses regulatory and governance gaps in international environmental law. A “gap” is defined as a lacuna, void, defect or deficiency.¹¹ For the purposes of the report, the terms “regulatory gaps” and “governance gaps” are understood to mean, respectively, substantive/normative (including procedural and institutional) gaps and implementation gaps in the international legal framework. A gap can occur within a multilateral environmental agreement with respect to its content or its ability to fulfil its object and purpose; between legal frameworks (e.g., substantive or procedural overlaps, discrepancies or conflicts); or where there is no regulation at all (e.g., limitations in substantive, institutional or geographical coverage). The term “environment-related instruments” in paragraph 1 of General Assembly resolution 72/277 is taken to include those international legal instruments that do not fall exclusively within the field of the environment or have as their primary objective the protection of the environment. In this regard, it may be noted that environmental concerns have gradually penetrated other international regulatory frameworks, such as those dealing with international trade, investment, intellectual property rights, human rights, peace and security, migration and disaster management.¹² Some of these regulatory frameworks will be addressed in the present report.

8. The report is divided into five substantive sections: section II identifies and assesses the scope and status of the principles of international environmental law; section III addresses gaps relating to the sectoral regulatory regimes; section IV identifies and assesses some environment-related instruments; section V deals with gaps relating to the governance structure of international environmental law; and section VI addresses gaps concerning the implementation and effectiveness of international environmental law.

II. Gaps concerning principles of international environmental law

A. Scope of the principles

9. Principles of international environmental law are an important building block and their usage is widespread. Some are included in non-binding instruments, including political instruments, while others are enshrined in issue-specific multilateral environmental agreements that are legally binding. When enshrined in such agreements, the scope of the principles is confined to that particular multilateral environmental agreement. However, those principles that are not contained in multilateral environmental agreements also play an important role in guiding the interpretation and further development of those agreements.

10. More generally, environmental principles also serve to supplement or complement more specific rules. Indeed, conventions containing environmental law provisions may expressly acknowledge the gap-filling function of principles.¹³ The general character of the principles permits their application to the continuously evolving interrelationships between human activity and the environment. The principles also play a role with respect to potential gaps arising from the use of

¹¹ See Bryan A. Garner, *A Dictionary of Modern Legal Usage*, 2nd ed. (Oxford University Press, 2001), p. 496.

¹² See Sands and others, *Principles of International Environmental Law*, p. 17.

¹³ See, for example, United Nations Convention on the Law of the Sea (UNCLOS), preamble.

different legal sources. Mutual supportiveness in contemporary international law progresses beyond the gap-filling paradigm of legal principles and instead requires the synthesis of sources of international law, if possible, in a given instance.¹⁴ In this context, environmental principles may help to unify international environmental law's current sectoral approach. A comprehensive and unifying international instrument clarifying all the principles of environmental law would contribute to making them more effective and strengthen their implementation.

B. Status of the principles

Prevention

11. States are required to exercise their sovereignty over natural resources in a manner which ensures that activities within their jurisdiction or control do not significantly damage the environment beyond their territorial boundaries. Since it first appeared in the 1938 *Trail Smelter* arbitration,¹⁵ the prevention of transboundary harm has been framed as a principle in foundational instruments of international environmental law,¹⁶ United Nations instruments,¹⁷ regional instruments,¹⁸ texts drafted by civil society¹⁹ and the decisions of the International Court of Justice.²⁰ This principle is intrinsic to a core preference in international law for preventing environmental harm rather than compensating for harm that has already occurred. The prevention principle is well established as a rule of customary international law, supported by relevant practice in many environmental treaties and major codification initiatives.²¹ In practice, this principle is also related to due diligence obligations, particularly the duty to undertake an environmental impact assessment prior to engaging in activities which pose a potential risk of transboundary harm.²²

¹⁴ See A/CN.4/L.682, para. 43.

¹⁵ *Trail Smelter Case (United States, Canada)* (1938, 1941), *Reports of the International Arbitral Awards*, vol. III, p. 1905, et. seq.

¹⁶ See Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration), Principle 21; World Charter for Nature (WCN), arts. 13, 19 and 21; UNCLOS, art. 194; Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention), preamble and art. 2; Convention on Biological Diversity (CBD), preamble and art. 3; Rio Declaration on Environment and Development (Rio Declaration), principles 2, 14, 18 and 19; United Nations Framework Convention on Climate Change (UNFCCC), preamble.

¹⁷ Draft articles on prevention of transboundary harm from hazardous activities, in *Yearbook of the International Law Commission, 2001*, vol. II, Part Two, para. 97. See also resolution 62/68, annex.

¹⁸ See Treaty on the Functioning of the European Union (TFEU), art. 191; Association of Southeast Asian Nations Agreement on the Conservation of Nature and Natural Resources (ASEAN Agreement), art. 20.

¹⁹ See Earth Charter, principle 6 (d); IUCN Draft Covenant, arts. 6, 14 and 41; Centre international de droit comparé de l'environnement, Draft International Covenant on the Human Right to the Environment (CIDCE Draft Covenant), arts. 4 (2)–(4).

²⁰ *Corfu Channel Case, Judgment of April 9th 1949, I.C.J. Reports 1949*, pp. 4 and 22; *Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment, I.C.J. Reports 1997*, p. 7, para. 140; *Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 14, para. 101.

²¹ See Leslie Anne Duvic-Paoli and Jorge E. Viñuales, "Principle 2: prevention", in Jorge E. Viñuales, ed., *The Rio Declaration on Environment and Development: A Commentary* (Oxford University Press, 2015), pp. 107, 120 and 121.

²² *Ibid.*, p. 118.

Precaution

12. This principle stipulates that States are required to adopt a precautionary approach when taking decisions or in regard to potential omissions which may harm the environment. Such a duty remains intact irrespective of the absence of scientific certainty as to the existence or extent of such risk.²³ While the principle as formulated in Principle 15 of the Rio Declaration reflects other critical principles, such as the effective implementation of international environmental law,²⁴ the legal basis of precaution as a principle is a matter of some controversy and debate.²⁵ However, the exercise of precaution in this respect is expressed in other foundational instruments of international environmental law,²⁶ regional instruments,²⁷ texts drafted by civil society²⁸ and rulings of the International Tribunal for the Law of the Sea.²⁹

Polluter pays

13. States are required not only to take measures against environmental pollution, but also to cooperate on liability regimes. This norm has a firm legal basis as a principle of law deriving from a variety of legal sources, including treaties and regional customs, particularly in Europe.³⁰ In practice, the principle reduces the regulatory burden on States in achieving pollution control objectives.³¹ The polluter pays principle is expressed in Principle 16 of the Rio Declaration, regional instruments³² and texts drafted by civil society.³³

Environmental democracy

14. The concept of environmental democracy is generally constituted by the principles of access to information, participation in decision-making and access to environmental justice. These elements of public participation have appeared in various domestic contexts since at least the early 1970s, and demonstrate links with

²³ See António Cançado Trindade, “Principle 15: precaution”, in Viñuales, ed., *The Rio Declaration on Environment and Development*, p. 403.

²⁴ See Martina Kunz, “Principle 11: environmental legislation”, in Viñuales, ed., *The Rio Declaration on Environment and Development*, pp. 311 and 321. See further A/HRC/37/59, (Framework principle 11) para. 33 (c), and (Framework principle 12) paras. 34–35.

²⁵ See Kunz, “Principle 11: environmental legislation”, p. 412.

²⁶ See WCN, art. 11 (b); Vienna Convention for the Protection of the Ozone Layer (Vienna Ozone Convention), preamble; International Convention on oil pollution preparedness, response and cooperation, 1990 (1990 London Convention), preamble; CBD, preamble; UNFCCC, art. 3 (3); Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Further Reduction of Sulphur Emissions, preamble (LRTAP Convention); Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, preamble and art. 3; Cartagena Protocol on Biosafety to the Convention on Biological Diversity (Cartagena Protocol), arts. 10 (6) and 11 (8); Stockholm Convention on Persistent Organic Pollutants (POPs Convention), preamble, arts. 1 and 8 (7) (a).

²⁷ See TFEU, art. 191 (2); Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention), art. 2 (2) (a).

²⁸ See IUCN Draft Covenant, art. 7; 2015 Oslo Principles on Global Climate Change Obligations (Oslo Principles), paras. 1 (a-b); CIDCE Draft Covenant, arts. 3 (1-2).

²⁹ *Southern Bluefin Tuna (New Zealand v. Japan; Australia v. Japan)*, Provisional Measures, Order of 27 August 1999, ITLOS Reports 1999, p. 280, para. 77; *Activities in the Area, Advisory Opinion, Case No. 17*, para. 135.

³⁰ See Priscilla Schwartz, “Principle 16: the polluter-pays principle”, in Viñuales, ed., *The Rio Declaration on Environment and Development*, pp. 429 and 435.

³¹ *Ibid.*, p. 429.

³² See TFEU, art. 191 (2); OSPAR Convention, art. 2 (2) (b).

³³ See Earth Charter, art. 6 (b); New Delhi Declaration of Principles of International Law Relating to Sustainable Development (New Delhi Declaration), para. 3.1; IUCN Draft Covenant, art. 6.

certain aspects of international human rights law.³⁴ While most global multilateral environmental agreements adopted since the United Nations Conference on Environment and Development, held in Rio de Janeiro, Brazil, in 1992, endorse public access to information and public participation by some means, many of the underlying legal developments have taken place regionally and with remarkably little geographic symmetry.³⁵ This constitutes a significant gap in international environmental law.

15. The specific requirement that States should make environmental information held by public authorities available to the public is expressed in foundational instruments of international environmental law,³⁶ United Nations instruments,³⁷ regional instruments³⁸ and texts drafted by civil society.³⁹ The specific requirement that States should enable the public to participate in the preparation of the decisions, measures, plans, programmes, activities, policies and normative instruments of public authorities that may have a significant effect on the environment is also expressed in foundational instruments of international environmental law,⁴⁰ regional instruments⁴¹ and texts drafted by civil society.⁴² The specific requirement that States should ensure effective and affordable access to administrative and judicial procedures to challenge the acts or omissions of public authorities or private persons that contravene environmental law is expressed in Principle 10 of the Rio Declaration, regional instruments⁴³ and texts drafted by civil society.⁴⁴

Cooperation

16. States are required to contribute to the conservation, protection and restoration of the integrity of the Earth's ecosystem. This entails an obligation to cooperate in good faith and in a spirit of global partnership towards the fulfillment of this objective. The framing of cooperation as a principle of international environmental law through the adoption of supplementary instruments and norms by conferences of parties serves the progressive development and dynamic evolution of treaty law.⁴⁵ The principle has been recognized in foundational instruments of international

³⁴ See Jonas Ebbesson, "Principle 10: public participation", in Viñuales, ed., *The Rio Declaration on Environment and Development*, p. 287.

³⁵ *Ibid.*, p. 293.

³⁶ See WCN, arts. 18 and 21 (a); Rio Declaration, Principle 10; Paris Agreement, art. 12.

³⁷ See draft articles on the prevention of transboundary harm from hazardous activities, in *Yearbook of the International Law Commission*, 2001, art. 13; and resolution 62/68, annex.

³⁸ See Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention), art. 1; African Convention on the Conservation of Nature and Natural Resources (African Convention), arts. XVI (1) (a-b).

³⁹ See Earth Charter, art. 8 (c); Johannesburg Principles on the Role of Law and Sustainable Development (Johannesburg Principles); New Delhi Declaration, para. 5.2; IUCN Draft Covenant, art. 15 (3); Oslo Principles, preamble; World Declaration on the Environmental Rule of Law (IUCN World Declaration), art. I (d); CIDCE Draft Covenant, arts. 8 (1)–(3) and 9 (1)–(2).

⁴⁰ See WCN, art. 23; Rio Declaration, Principle 10; Paris Agreement, art. 12.

⁴¹ See Aarhus Convention, arts. 6 (2), 7 and 8; African Convention, art. XVI (c).

⁴² See IUCN Draft Covenant, art. 15 (4); IUCN World Declaration, art. I (a), Principle 10; CIDCE Draft Covenant, arts. 10 (1)–(3).

⁴³ See European Convention for the Protection of Human Rights and Fundamental Freedoms, art. 13; Aarhus Convention, art. 9.

⁴⁴ See Johannesburg Principles, preamble; IUCN Draft Covenant, art. 15 (5); Oslo Principles, para. 26; IUCN World Declaration, preamble; 2016 UNESCO First Draft of a Preliminary Text of a Declaration on Ethical Principles in Relation to Climate Change, art. 5 (5).

⁴⁵ See Peter H. Sand, "Principle 27: cooperation in a spirit of global partnership", in Viñuales, ed., *The Rio Declaration on Environment and Development*, p. 617.

environmental law,⁴⁶ United Nations instruments,⁴⁷ texts drafted by civil society⁴⁸ and the World Trade Organization (WTO).⁴⁹

17. Cooperation is of vital importance to the objective of preventing the degradation of the environment and human health that may be caused by certain dangerous activities and substances, particularly with respect to developing States.⁵⁰ Notification and assistance in cases of emergency also serves to prevent the dangers posed by natural disasters to human life and the environment.⁵¹ While the obligation to cooperate in the form of notification in cases of emergency is already a part of customary international law, the duty of assistance in such events has received only limited recognition.⁵² Such specific cases of transboundary cooperation have been recognized in foundational instruments of international environmental law,⁵³ in article 19, paragraph 1, of the draft international covenant of the International Union for Conservation of Nature and in article 7 of the draft articles on the protection of persons in the event of disasters.⁵⁴

Right to a clean and healthy environment

18. The relationship between the enjoyment of basic human rights and environmental quality has long been recognized. However, international treaties have not defined the threshold below which the level of environmental quality must fall before a breach of a person's human rights has occurred. Arguably, that threshold differs depending on the human right in question.

19. Currently, it is reported that there are at least 155 States that recognize a human right to a healthy environment in their constitutions or subconstitutional regulations.⁵⁵ In addition, such a right is evoked in non-binding declarations, such as the Stockholm and Rio Declarations. Only a few sector-specific binding international and regional conventions recognize the right to live in a healthy environment.⁵⁶ Existing regional

⁴⁶ See Stockholm Declaration, principle 24; UNCLOS, art. 197; WCN, arts. 21 (a) and 22; Vienna Ozone Convention, art. 2 (2) (a); Agenda 21, chap. 2.1; Rio Declaration, principles 5, 7, 9, 12–14, 24 and 27; UNFCCC, preamble and art. 3 (5); CBD, art. 5; United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD), arts. 3(b) and (c); Paris Agreement, arts. 7 (6)–(7) (a) and 8 (4) (a)–(f).

⁴⁷ See draft articles on prevention of transboundary harm from hazardous activities, art. 4.

⁴⁸ See Oslo Principles, preamble; CIDCE Draft Covenant, art. 20.

⁴⁹ World Trade Organization, *United States—Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R, AB-1998-4, Report of the Appellate Body, 12 October 1998, para. 168.

⁵⁰ See Makane M. Mbengue, “Principle 14: dangerous activities and substances”, in Viñuales, ed., *The Rio Declaration on Environment and Development*, p. 383.

⁵¹ See Phoebe Okowa, “Principle 18: notification and assistance in case of emergency”, in Viñuales, ed., *The Rio Declaration on Environment and Development*, p. 471.

⁵² *Ibid.*, p. 491.

⁵³ See UNCLOS, arts. 123(a)–(d) and 198; 1990 London Convention, art. 7 (1); Convention on the Transboundary Effects of Industrial Accidents, preamble; Rio Declaration, principles 14 and 18; CBD, art. 14 (1) (d).

⁵⁴ Adopted by ILC in 2016. See A/71/10, para. 48.

⁵⁵ See David R. Boyd, “Catalyst for change: evaluating forty years of experience in implementing the right to a healthy environment”, in John H. Knox and Ramin Pejan, eds., *The Human Right to a Healthy Environment* (Cambridge University Press, 2018), pp. 17–42.

⁵⁶ These include African Charter on Human and Peoples' Rights, art. 24; Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights, art. 11; Aarhus Convention, art. 1; African Convention, art. III; Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa, art. 18; Arab Charter on Human Rights, art. 38; Inter-American Convention on Protecting the Human Rights of Older Persons, art. 25; Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazu)

and international instruments on this subject do not universally or completely define the scope and content of the right. Regional agreements that recognize the right to a healthy environment generally pertain to human rights law and do not take into account the specificities of environmental issues. Several such agreements do not allow individuals or groups to file individual or public interest claims. While the right to a healthy environment is not explicitly included in the European Convention on Human Rights adopted in 1950, the European Court of Human Rights has used it to afford indirect protection through those rights that are included, on the basis of a dynamic interpretation of the Convention.⁵⁷ International environmental law also currently lacks an appropriate legal framework to protect environmental rights defenders.⁵⁸

Sustainable development

20. Many international environmental law treaties make explicit or implicit references to the essential tenets of sustainable development.⁵⁹ Sustainable development is also referred to in other international agreements, such as trade and investment treaties and WTO agreements.⁶⁰ International courts and tribunals have embraced sustainable development as a source of law and policy when addressing treaty implementation and the interpretation of norms.⁶¹ This can be seen in judicial instances ranging from the International Court of Justice⁶² to regional courts, including those that address related fields, such as the Inter-American Court of Human Rights,⁶³ the African Commission on Human and Peoples' Rights,⁶⁴ specialized panels and tribunals such as the International Tribunal for the Law of the Sea⁶⁵ and

Agreement), art. 4 (1).

⁵⁷ See European Court of Human Rights (ECHR), *López Ostra v. Spain*, Application No. 16798/90, Judgment, 9 December 1994, para. 51. In other cases, the Court has felt that the right to life protected by article 2 of the Convention for the Protection of Human Rights and Fundamental Freedoms includes the right to be protected against risks resulting from hazardous industrial activities. See ECHR, *Öneriyildiz v. Turkey*, Application No. 48939/99, Judgment, 30 November 2004.

⁵⁸ Unlike human rights defenders under resolution 53/144 of 9 December 1998.

⁵⁹ See, for example, Minamata Convention on Mercury (2017); Paris Agreement (2015); United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (1994); Vienna Convention for the Protection of the Ozone Layer (1988); Montreal Protocol on Substances that Deplete the Ozone Layer (1989).

⁶⁰ See Nico Schrijver, "Advancements in the principles of international law on sustainable development", in Marie-Claire Cordonier Segger and H.E. Judge C.G. Weeramantry, eds., *Sustainable Development Principles in the Decisions of International Courts and Tribunals, 1992 – 2012* (Routledge, 2017), pp. 99–102.

⁶¹ See Cordonier Segger and Weeramantry, eds., *Sustainable Development Principles in the Decisions of International Courts and Tribunals, 1992 – 2012*.

⁶² See, for example, General list No. 135, in *Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*, Judgment, *I.C.J. Reports 1997*; *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, *I.C.J. Reports 2010*; *Whaling in the Arctic (Australia v. Japan: New Zealand intervening)*, Judgment *I.C.J. Reports 2014*.

⁶³ See the following cases from the Inter-American Court of Human Rights: *Saramaka People v. Suriname*, Judgment, 28 November 2007; *Yakye Axa Indigenous Community v. Paraguay*, Judgment, 17 June 2005; *Mayagna (Sumo) Awas Tingni Community v. Nicaragua*, Judgment, 31 August 2001. See also African Commission on Human Rights and Peoples' Rights, *Centre for Minority Rights Development (Kenya) and Minority Rights Group International (on behalf of Endorois Welfare Council) v. Kenya*, Communication No. 276/03, 2009.

⁶⁴ See African Commission on Human Rights and Peoples' Rights, *Social and Economic Rights Action Center (SERAC) and the Center for Economic and Social Rights (CESR) v. Nigeria*, Communication No. 155/96, 2001.

⁶⁵ See the following cases from the International Tribunal for the Law of the Sea: *Volga Case (Russian Federation v. Australia)*, 42 ILM 159 (2003); *MOX Plant (Ireland v. United*

the Dispute Settlement Body of WTO.⁶⁶ Recently, sustainable development has been incorporated into the larger global agenda by the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.⁶⁷ The Goals can be seen as specific indicators for sustainable development and represent a significant milestone. However, questions remain as to the extent to which the sustainable development principles represent binding or non-binding rules or indeed whether they should constitute a source of law. Some have suggested that this reflects the need for further analysis and a need for the codification of sustainable development principles into a source of law. Others hold that this could undermine the dynamic aspect of sustainable development. Another gap relates to the fact that sustainable development still awaits its effective implementation as a holistic legal concept with regard to addressing the relationship between international environmental law and other fields of international law.⁶⁸

Common but differentiated responsibilities and respective capabilities

21. The principle of common but differentiated responsibilities and respective capabilities developed from the application of equity in general international law. Traditionally, international law is underpinned by the principle of the sovereign equality of States, which aims at guaranteeing that States have equal rights and obligations. In the Rio Declaration, the principle of common but differentiated responsibilities refers to instances where developed countries have contributed more to the environmental problem at stake and have greater capacity to respond to the environmental challenge. Not all multilateral environmental agreements incorporate the concept of differentiation. Those that do include it ensure the participation of all States. As a technique to achieve this objective, States in different situations are subject to different obligations and enjoy different rights. Multilateral environmental agreements express the principle in different ways, and a general application of the principle is not evident.⁶⁹ Some agreements operate with categories of developed and developing country parties, with substantively stronger obligations for developed and less onerous obligations as well as entitlements to financial, technological or capacity-building support for developing country parties and parties with economies in transition.⁷⁰ Other agreements use self-selection,⁷¹ or address differentiation based on criteria such as financial and technological resources, the capability to engage in

Kingdom), Order of 13 November 2001; *Southern Bluefin Tuna (Australia v. Japan)*, Order of 27 August 1999; *M/V Saiga (Saint Vincent and the Grenadines v. Guinea)*, Case No. 1, Order of 21 November 1997.

⁶⁶ See the following reports from WTO: *China – Measures Related to the Exportation of Various Raw Minerals*, WT/DS394/AB/R, WT/DS395/AB/R and WT/DS398/AB/R, 30 January 2012; *Brazil – Measures Affecting Imports of Retreaded Tyres*, WT/DS332/16, 29 August 2008; *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R, 12 October 1998.

⁶⁷ United Nations Sustainable Development Goals (2015).

⁶⁸ See Christina Voigt, *Sustainable Development as a Principle of International Law: Resolving Conflicts between Climate Measures and WTO Law* (Martinus Nijhoff, 2009).

⁶⁹ ITLOS Seabed Disputes Chamber, for example, found that “the responsibilities and liability of the sponsoring State apply equally to all sponsoring States, whether developed or developing.” It concluded that: “The spread of sponsoring States ‘of convenience’ would jeopardize uniform application of the highest standards of protection of the marine environment, the safe development of activities in the Area and protection of common heritage of mankind”. See *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, *Advisory Opinion*, paras. 158–159.

⁷⁰ Lavanya Rajamani, *Differential Treatment in International Environmental Law* (Oxford University Press, 2006).

⁷¹ International Civil Aviation Organization resolution A39-3: Consolidated statement of continuing ICAO policies and practices related to environmental protection – Global Market-based Measure (MBM) scheme (CORSA).

cost-effective environmental mitigation action, whether a State is an export or import State,⁷² whether a State is affected by the issue⁷³ or several other categories.⁷⁴ The Paris Agreement states that, in the context of climate change, differentiation is dynamic, not limited to particular parameters and has to be seen in the light of different national circumstances.⁷⁵

Non-regression and progression

22. The principle of non-regression is relatively new to the field of environmental law, while its underlying idea of disallowing backtracking is well understood in systems that protect human rights and in labour law. The idea that once a human right is recognized, it cannot be restrained, destroyed or repealed is shared by all major international instruments on human rights.⁷⁶ The corollary to the principle of non-regression is the principle of progression. Non-regression aims at ensuring that environmental protection is not weakened, while progression aims at the improvement of environmental legislation, including by increasing the level of protection, on the basis of the most recent scientific knowledge. The Paris Agreement is explicit in this regard and provides, in article 4, paragraph 3, that each successive nationally determined contribution “will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition”.

III. Gaps relating to existing regulatory regimes

A. General

23. Most States have become parties to major multilateral environmental agreements. Since the relevant environmental problems at stake are often of a global nature, the solution lies in collective action.⁷⁷ The challenge is to encourage the participation of all relevant actors while at the same time ensuring that the commitments are ambitious enough to provide for an effective response to the problem, and to ensure that parties comply with their obligations.⁷⁸

24. The involvement of a large number of States with diverse national circumstances and priorities in treaty negotiations leads to the fact that multilateral environmental agreements often serve multiple objectives which are not always easily reconciled or mutually enhancing, but arise out of political compromises struck between different

⁷² See, for example, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention), or the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

⁷³ See UNCCD.

⁷⁴ Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, decision XXVIII/1: further amendment of the Montreal Protocol, annex I.

⁷⁵ See Christina Voigt and Felipe Ferreira, “‘Dynamic differentiation’: the principles of CBDR-RC, progression and highest possible ambition in the Paris Agreement”, *Transnational Environmental Law*, vol. 5, No. 2 (October 2016).

⁷⁶ See, for example, Universal Declaration of Human Rights, art. 30.

⁷⁷ See Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge University Press, 1990); see also Elinor Ostrom, “Polycentric systems for coping with collective action and global environmental change”, *Global Environmental Change*, vol. 20, No. 2 (October 2010).

⁷⁸ See Scott Barrett, *Environment and Statecraft: The Strategy of Environmental Treaty-Making* (Oxford University Press, 2003); and Oran R. Young, *The Institutional Dimension of Environmental Change – Fit, Interplay, and Scale* (MIT Press, 2002).

interests.⁷⁹ Without these compromises, and their often deliberate constructive ambiguities and gaps, however, the likelihood of agreement on international environmental treaties would be significantly diminished, undermining the prospect for global cooperation on urgent environmental issues.

25. Broad participation also relies on workable notions of fairness, including the concepts of equitable burden and effort-sharing. Multilateral environmental agreements therefore often contain provisions that take into account differing circumstances.⁸⁰ Accordingly, certain categories of States, often developing countries, are subject to “softer” obligations, for example longer phase-out periods or more flexible targets, while developed countries are subject to obligations to provide financial, technological and capacity-building support to developing countries and economies in transition. This situation is a necessary requirement to bring all relevant actors on board. In fact, because the national circumstances and capabilities of States differ significantly, the future development of international environmental law is likely to require more, rather than less, differentiation and flexibility.⁸¹

B. Protection of the atmosphere

Climate change

26. The international climate change regime consists of the United Nations Framework Convention on Climate Change of 1992,⁸² its Kyoto Protocol of 1997⁸³ and the Paris Agreement of 2015.⁸⁴ The ultimate objective of the Convention is the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.⁸⁵ The Convention is a framework instrument establishing general principles, basic obligations and institutional arrangements. It does not contain binding, individual quantified emission reduction targets and timetables, but developed country parties and other parties listed in annex I of the Convention are enjoined to adopt national policies and take corresponding measures.⁸⁶

27. The Kyoto Protocol supplements the Convention by establishing binding, quantified and economy-wide emission reduction targets for a number of developed country parties within a framework of successive commitment periods. At the beginning of its first commitment period in 2008, it covered roughly 60 per cent of global emissions, and at the end of the first commitment period in 2012, this had declined to 25 per cent of global emissions. The Kyoto Protocol remains in force. An amendment adopted in 2012 establishing a second commitment period from 2013 to 2020⁸⁷ is receiving an increased number of ratifications, which, if it enters into force, would enable a second commitment period under the Kyoto Protocol.

28. The Paris Agreement, adopted at the twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change held in

⁷⁹ Stephen Humphreys and Yoriko Otomo, “Theorizing international environmental law”, in Anne Orford and Florian Hoffmann, eds., *The Oxford Handbook of the Theory of International Law* (Oxford University Press, 2016).

⁸⁰ See Rajamani, *Differential Treatment in International Environmental Law*.

⁸¹ Oliver Stuenkel, *Post Western World*, (Polity Press, 2016).

⁸² Adopted in New York on 9 May 1992, entry into force on 21 March 1994.

⁸³ Adopted in Kyoto on 11 December 1997, entry into force on 16 February 2005.

⁸⁴ Adopted in Paris on 12 December 2015, entry into force on 4 November 2016.

⁸⁵ UNFCCC, art. 2.

⁸⁶ Daniel Bodansky, “The United Nations Framework Convention on Climate Change: a commentary”, *Yale Journal of International Law*, vol. 18, Issue 2 (1993).

⁸⁷ Doha Amendment to the Kyoto Protocol, adopted on 8 December 2012, not yet in force.

December 2015, aims, inter alia, at holding the increase in global average temperatures to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C, thereby specifying the ultimate objective of the Convention in measurable temperature terms. The Agreement is transformative, seeking to globally reshape economies and societies towards climate neutrality and resilience. It explicitly recognizes the link between human rights and the environment, calling upon States to respect, promote and consider their respective human rights obligations when taking climate action. It requires global emissions to peak as soon as possible, enjoins States to achieve climate neutrality by the second half of this century, establishes the goal of enhancing adaptive capacity, reiterates the obligations of developed country parties regarding the provision of support while encouraging other parties to do so voluntarily and, in its preamble, calls on parties, when taking action to address climate change, to consider human rights obligations as well as gender equality, the empowerment of women and intergenerational equity. The main obligation, binding on all parties, is the communication of nationally determined contributions every five years, which will reflect each party's highest possible ambition and represent a progression beyond the previous nationally determined contribution.⁸⁸ It may also be noted that the current nationally determined contributions are so far not sufficiently ambitious, and if they are not increased they will not lead to the realization of the global temperature goal.⁸⁹ Arguably, a top-down allocation of binding, individual emission reduction obligations, perhaps even combined with an enforcement mechanism, would have been a more direct and predictable way of staying below that threshold, but that proved impossible to agree on. Liability and compensation for climate damage was explicitly excluded from the regime of the Paris Agreement, and some have argued that such exclusion represents an important gap.⁹⁰

29. The Kyoto Protocol and the Paris Agreement have arrangements to promote and facilitate compliance as well as address cases of non-compliance. The United Nations Framework Convention on Climate Change foresaw the establishment of a multilateral consultative process for the resolution of questions regarding implementation that was never operationalized. The interplay of multiple treaties that have different parties and different obligations poses a systemic challenge within the United Nations climate change regime. There may be a need for harmonization, for example with respect to reporting, in order to prevent regression and tensions among the requirements of the three treaties.

Stratospheric ozone layer

30. The international legal framework for the protection of the stratospheric ozone layer consists of the Vienna Convention for the Protection of the Ozone Layer of 1985⁹¹ and the Montreal Protocol to the Vienna Convention of 1987⁹² and its subsequent amendments. The most recent amendment, adopted in Kigali in 2016, expanded the scope of the Montreal Protocol to cover the phase-down of hydrofluorocarbons,⁹³ which closed a gap between the climate and the ozone regimes.⁹⁴ The amendment ensures the implementation of the two regimes in a mutually supportive manner. Though the international ozone regime has been largely

⁸⁸ See Paris Agreement, art. 4 (2); Voigt and Ferreira, ““Dynamic differentiation””.

⁸⁹ United Nations Environment Programme (UNEP), *The Emissions Gap Report: A UN Environment Synthesis Report* (2017).

⁹⁰ See FCCC/CP/2015/10/Add.1, para. 51 and art. 8.

⁹¹ Adopted in Vienna on 22 March 1985, entry into force on 22 September 1988.

⁹² Adopted in Montreal on 16 September 1987, entry into force on 1 January 1989.

⁹³ Adopted in Kigali on 15 October 2016, entry into force on 1 January 2019.

⁹⁴ See Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, art. IV.

successful, some important substantive gaps exist. The Montreal Protocol addresses only the production and consumption of controlled substances. Some ozone-depleting substances are not controlled under the Montreal Protocol, including some short-lived chemical pollutants and nitrous oxide (N₂O); some specific uses of controlled substances are not subject to any controls, such as uses in feedstock and for quarantine and pre-shipment; and the Protocol does not regulate the disposal of controlled substances that are in banks, such as insulation foams or equipment. With respect to monitoring and verification, all parties are required by the Protocol to report their production and consumption of all controlled substances on an annual basis, even if the substances have been completely phased out. While the Vienna Convention and the Montreal Protocol both provide for ongoing scientific monitoring of the ozone layer, there is no explicit requirement for periodic verification at the national level to ensure that substances that have been phased out remain so. Parties operating under paragraph 1 of Article 5, that is, developing countries that have levels of consumption below the limits defined by the Protocol and receive funding under the Multilateral Fund for the Implementation of the Montreal Protocol for the conversion of manufacturing industries that are based on the use of controlled substances, are required to destroy the replaced equipment that used the controlled substances. Countries receiving funding are also required to report additional data annually to demonstrate their compliance with their phase-out agreements. Periodic independent verification is undertaken to confirm this compliance, although in general verification ceases after a project has been completed.

31. The Montreal Protocol has a non-compliance procedure based on a cooperative and consultative approach to addressing cases of non-compliance. Parties are directly responsible for the enforcement of the Protocol's restrictions on controlled substances, and report annually to the secretariat of the Montreal Protocol on their production and consumption of controlled substances and related matters. These reports inform the discussions of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol, which reviews compliance issues and makes recommendations to the Meeting of the Parties to the Montreal Protocol with respect to decisions to be adopted. The reported data is accepted at face value; there is no mandate for the secretariat or the Implementation Committee to undertake verification of any reported data, except at the invitation of the party concerned. However, in situations where the secretariat, in reviewing the data reports, becomes aware of possible non-compliance by any party, it may request further information and, if the matter remains unresolved, refer the matter to the Implementation Committee for its consideration.

32. Illegal trade in ozone-depleting substances controlled under the Protocol is dealt with at the country level through a system of export and import licenses enforced by relevant national authorities.⁹⁵ The secretariat has a limited role to play by sharing data on imports and exports with concerned exporting and importing countries, respectively, and disseminating any information on illegal trade that parties may provide.⁹⁶ Beyond this, there is no specific mandate for any institution of the Protocol to investigate or undertake any verification with respect to illegal trade.

Mercury

33. Mercury and mercury compounds are recognized as chemicals of global concern as a result of their long-range transport in the atmosphere, persistence in the

⁹⁵ See "The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer as adjusted and amended by the second meeting of parties", articles 4, 4A and 4B.

⁹⁶ Decisions XIV/7, XVII/16 and XXIV/12 of the Meeting of the Parties to the Montreal Protocol.

environment, ability to bioaccumulate in ecosystems and significant negative effect on human health and the environment.⁹⁷ The Minamata Convention on Mercury of 2013⁹⁸ obligates parties to reduce or control sources of mercury pollution in order to protect human health and the environment.⁹⁹ Reporting is the principal basis for evaluating both individual government compliance and the overall effectiveness of the Minamata Convention. Robust monitoring as well as independent evaluation and verification of data will be crucial. Some experts have suggested that a consistent and comprehensive data collection system needs to be established to best evaluate the effectiveness of the Convention. There is no specific guidance on content and format for data reported under article 21 of the Convention at this time, nor does the data allow for assessing collective progress. Furthermore, monitoring of the global levels could be complemented by observations on the local and regional scale.¹⁰⁰ There is a general lack of knowledge regarding local situations, especially in developing countries, due to the dearth of data and the high cost of sampling and analysis.¹⁰¹ It can also be argued that there is a need to collect and compile better export and import data in support of the Convention's trade provisions.¹⁰²

34. Simultaneously addressing mercury supply and demand in a coordinated way presents an essential governance challenge.¹⁰³ It might be necessary to identify other sources of mercury emissions and releases, develop and update guidance on best available techniques and best environmental practices and/or introduce new provisions to account for cross-media mercury management. In addition, the Conference of the Parties to the Minamata Convention may wish to expand its focus to additional mercury-containing products and processes. The implementation of the Minamata Convention also intersects with other multilateral environmental agreements, thereby raising the issue of coordination. In this regard, the environmentally safe handling and disposal of mercury wastes creates policymaking and management linkages with parallel efforts under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, since the Basel and Stockholm Convention Regional Centres also assist countries with mercury abatement.¹⁰⁴ As mercury is a by-product of fossil fuel combustion, implementation of the Minamata Convention will also significantly contribute to mitigating climate change.¹⁰⁵

Transboundary air pollution

35. Air pollution is a major global environmental problem, with various adverse effects on health and the environment. Transboundary air pollution is addressed by various sectoral and regional instruments, most prominent among them the

⁹⁷ UNEP, *Global Mercury Assessment* (2002); UNEP, *The Global Atmospheric Mercury Assessment: Sources, Emissions and Transport* (2008).

⁹⁸ Adopted in Kumamoto, Japan, on 10 October 2013, entry into force 16 August 2017.

⁹⁹ Henrik Hallgrim Eriksen and Franz Xaver Perez, "The Minamata Convention: a comprehensive response to a global problem", *Review of European, Comparative and International Law*, vol. 23, No. 2 (July 2014).

¹⁰⁰ David C. Evers and others, "Evaluating the effectiveness of the Minamata Convention on Mercury: principles and recommendations for next steps", *Science of the Total Environment*, vol. 569–570, No. 1 (November 2016).

¹⁰¹ Henrik Selin and others, "Linking science and policy to support the implementation of the Minamata Convention on Mercury", *Ambio*, vol. 47, No. 2 (March 2018).

¹⁰² UNEP, *Global Mercury: Supply, Trade and Demand* (2017).

¹⁰³ *Ibid.*

¹⁰⁴ Henrik Selin, *Global Governance of Hazardous Chemicals: Challenges of Multilevel Management* (MIT Press, 2010).

¹⁰⁵ Sands and others, *Principles of International Environmental Law*, p. 276.

Convention on Long-Range Transboundary Air Pollution of 1979¹⁰⁶ and its eight supplementary protocols, the Stockholm Convention on Persistent Organic Pollutants of 2001 and the Association of Southeast Asian Nations (ASEAN) Agreement on Transboundary Haze Pollution of 2002.¹⁰⁷ The fragmented state of international law on air pollution results in significant gaps in “geographical coverage, regulated activities, regulated substances and, most importantly, applicable principles and rules”.¹⁰⁸

36. The Convention on Long-Range Transboundary Air Pollution addresses the problem of acid rain and other dispersed pollutants.⁶⁸ The Convention is restricted in regional scope to Europe and North America in a world where rapid economic growth occurs in many other regions. It does not stipulate specific limits on emissions of industrial pollutants or targets or timetables. However, it has evolved from addressing single pollutants (e.g., sulphur dioxide (SO₂)) and single problems to a more comprehensive, more detailed approach of eight protocols addressing multi-pollutants through multi-effect instruments.¹⁰⁹ Moreover, it has served as a model for subsequent treaties adopted at the global level to address climate change and ozone depletion, and serves as a precedent for other regions to address transboundary air pollution. Compliance by parties with their obligations under the protocols to the Convention is reviewed by the Implementation Committee. There are, however, significant gaps: there are no rules on liability, some of the protocols have not entered into force and the geographical scope is limited.

37. As rapid economic development takes place in other regions, there is an urgent need to address the challenge of air pollution in those regions. Efforts are under way to expand and/or replicate the Convention on Long-Range Transboundary Air Pollution regime beyond the European and North American regions.¹¹⁰

38. The ASEAN Agreement on Transboundary Haze Pollution addresses transboundary haze pollution from land and forest fires. Nevertheless, it has been suggested that the Agreement’s effectiveness is limited by the principle of non-interference, as it does not set national targets for emission reductions and was described as a regime for cooperation and prevention.¹¹¹ The Agreement lacks provisions for liability and compliance and does not address air pollution from sources other than land and forest fires, such as combustion engines, household pollution and industrial solid fuel combustion. In addition, and similar to the Convention on Long-Range Transboundary Air Pollution, the Agreement contains no specific provisions on State responsibility and/or compensation for transboundary haze pollution.

39. The International Law Commission is currently developing a set of draft guidelines on the protection of the atmosphere in relation to atmospheric pollution

¹⁰⁶ Adopted in Geneva on 13 November 1979, entry into force on 16 March 1983.

¹⁰⁷ Adopted in Kuala Lumpur, on 10 June 2002, entry into force 25 November 2003.

¹⁰⁸ For a list of binding multilateral and bilateral agreements relevant to atmospheric problems, see A/CN.4/667, para. 30.

¹⁰⁹ Adam Byrne, “The 1979 Convention on Long-Range Transboundary Air Pollution: assessing its effectiveness as a multilateral environmental regime after 35 years”, *Transnational Environmental Law*, vol. 4, No. 1 (April 2015); Adam Byrne, “Trouble in the air: recent developments under the 1979 Convention on Long-Range Transboundary Air Pollution”, *Review of European, Comparative and International Environmental Law*, vol. 26, No. 3 (November 2017).

¹¹⁰ Sands and others, *Principles of International Environmental Law*, p. 293.

¹¹¹ Shawkat Alam and Laely Nurhidayah, “The international law on transboundary haze pollution: what can we learn from the Southeast Asia region?”, *Review of European, Comparative and International Environmental Law*, vol. 26, No. 3 (November 2017).

and atmospheric degradation¹¹² which, inter alia, purports to recognize the existence of an international legal obligation to protect the atmosphere. Work on the draft guidelines is expected to be concluded in 2020, at which time they will be referred to the General Assembly for action.

C. Conservation of biological diversity and protection of soils

Biological diversity

40. Biological diversity is the variability of living systems. It comprises genetic, species and ecosystem diversity. Its usage in international environmental law is relatively new, as older international treaties dealt with single species or referred to “nature” or “wildlife”. There is scientific consensus that, globally, biodiversity is being lost at an alarming rate.¹¹³ Threats to biodiversity come from a multitude of direct and indirect sources and activities, ranging from habitat fragmentation, pollution and the introduction of alien invasive species to climate change.¹¹⁴ Drivers of biodiversity loss are often complex, multiple and interlinked, and require the interplay of many different instruments.¹¹⁵ Many of the threats, as well as the habitats, ecosystems or species to which they apply, do not respect national boundaries or are found in areas beyond national jurisdiction. At the same time, in the light of the complexity of the issue, the science is incomplete or lacking in some aspects.

41. The legal instruments for the conservation of biodiversity have developed without an overall strategy and have no coherent structure. This situation leaves some issues without specific, legally binding regulation, including on the conservation and sustainable use of forests,¹¹⁶ the pollution of marine areas by land-based plastic waste, the protection of soil, the use of pesticides, noise pollution, human rights and biodiversity,¹¹⁷ the Arctic area, nanomaterials and some geo-engineering processes.

42. The Convention on Biological Diversity¹¹⁸ is the central international legal instrument for the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the utilization of genetic resources.¹¹⁹ Unlike earlier nature conservation instruments, the Convention takes a more holistic approach that addresses direct and indirect causes of biodiversity loss and seeks to “mainstream” biodiversity considerations into all relevant policy areas.¹²⁰ A main requirement for parties is the development of national biodiversity strategies and action plans.¹²¹ It is widely recognized, however, that insufficient progress has been made on their implementation as well as on integrating biodiversity considerations into other sectors or cross-sectoral policies. The establishment of protected areas is a primary tool to implement in situ conservation, though its effectiveness is a concern. While target 11 of the Aichi Biodiversity Targets

¹¹² See A/73/10, para. 78.

¹¹³ Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010); Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Synthesis* (Island Press, 2005).

¹¹⁴ Ibid.

¹¹⁵ Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3*.

¹¹⁶ In 1992, the United Nations Conference on Environment and Development adopted the Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests (see A/CONF.151/26/Rev.1 (Vol. I)).

¹¹⁷ See CBD, art. 8 (j).

¹¹⁸ Adopted in Rio de Janeiro, Brazil, on 5 June 1992, entry into force on 29 December 1993.

¹¹⁹ CBD, art. 1.

¹²⁰ Sands and others, *Principles of International Environmental Law*, p. 387.

¹²¹ CBD, art. 5.

provides for protected areas, it does not impose legal obligations. Instead, parties are urged to develop national and regional plans with a view to contributing to efforts to reach the global Aichi Targets. This approach may not be sufficient to address the interconnectedness of ecosystems activities or uses that take place outside the protected area.¹²² Binding commitments, or voluntary action combined with stronger monitoring, reporting and verification, should be considered.¹²³ In addition, one of the major deficiencies of the Convention is the limitation of its jurisdictional scope to areas within national jurisdiction.¹²⁴

43. The effective implementation of the Convention on Biological Diversity also depends on cooperation with and mutual support among agreements dealing with climate change, the protection of the marine environment, freshwater resources and hazardous wastes. Cooperation is also required with international agreements in other fields such as trade, intellectual property rights and plant genetic resources for food and agriculture.¹²⁵ The complex regulatory environment dealing with invasive alien species, comprising the Convention on Biological Diversity, the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), WTO and the World Customs Organization, requires policy coordination and coherence. More recently, the issues of synthetic biology and digital sequence information have garnered significant concern and raised questions about the applicability of the Convention.

44. Although the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity of 2010 establishes specific requirements regarding access and the terms and conditions of such access,¹²⁶ including disclosure requirements for the use of genetic resources or traditional knowledge associated with genetic resources, the absence of similar disclosure rules in the international patent system under the Patent Cooperation Treaty of the World Intellectual Property Organization (WIPO) is likely to undermine the effectiveness of the regime. There may be a need to develop measures of cooperation with and mutual support between the two regimes.

45. The conservation and effective management of migratory species is the objective of the Convention on the Conservation of Migratory Species of Wild Animals of 1979. Parties that are range states of migratory species listed in appendix I of the Convention must endeavour to conserve and restore habitats and to prevent or minimize adverse effects of activities that seriously impede or prevent migration.¹²⁷ For species that have an “unfavourable conservation status” the Convention requires that range states conclude agreements to benefit those species.¹²⁸ So far, seven legally binding agreements have been adopted,¹²⁹ but there remains ample scope for further

¹²² Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law* (Routledge, 2016).

¹²³ Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 4* (2014).

¹²⁴ CBD, art. 4. The Convention also applies to areas beyond national jurisdiction, but only for processes and activities carried out under the jurisdiction or control of a party.

¹²⁵ Sands and others, *Principles of International Environmental Law*, pp. 388 and 405.

¹²⁶ Entry into force on 12 October 2014; see also UNEP/CBD/COP/DEC/X/1.

¹²⁷ Convention on the Conservation of Migratory Species of Wild Animals, art. III (4).

¹²⁸ *Ibid.*, art. IV.

¹²⁹ Agreement on the Conservation of Seals in the Wadden Sea; Agreement on the Conservation of Populations of European Bats; Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas; Agreement on the Conservation of African-Eurasian Migratory Waterbirds; Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area; Agreement on the Conservation of Albatrosses and Petrels; Agreement on the Conservation of Gorillas and Their Habitats.

range state agreements. Several cooperative arrangements between the Convention and other multilateral environmental agreements and environmental institutions have been established. It has been noted, however, that the collaboration with the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services lacks any institutional arrangements to make the biodiversity-related decisions and resolutions of those multilateral environmental agreements a priority of the Platform. Such a link could also ensure that the Platform's outputs are considered by other biodiversity-related multilateral environmental agreements as a basis for their decision-making processes, thereby avoiding parallel processes.

46. The Convention on International Trade in Endangered Species of Wild Fauna and Flora¹³⁰ regulates trade with regard to approximately 36,000 species, which are included in three appendices to the Convention.¹³¹ The implementation and enforcement of the Convention relies on national laws and effective administration, inspections and border controls of permits by competent national authorities. Compliance and enforcement, including addressing illegal trade,¹³² remain significant challenges. There is a general need to strengthen enforcement through training as well as a need for additional support and closer collaboration between national enforcement agencies and intergovernmental organizations such as the World Customs Organization and the International Criminal Police Organization (INTERPOL). Better coordination and a clarification of the role of the Convention and its relationship with those agreements might be needed, especially with respect to some endangered, or potentially endangered, commercial fisheries species that are regulated under different agreements, such as the United Nations Convention on the Law of the Sea, the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the 1995 Fish Stocks Agreement) and regional fisheries management organizations.

47. The Convention on Wetlands of International Importance especially as Waterfowl Habitat of 1971 was the first international agreement to protect a particular habitat, rather than a species. The Convention is not part of the United Nations system, and that fact is considered to have imposed some constraints on its operation as well as its participation in some of United Nations processes.

Land degradation and soil protection

48. Land and soil degradation has long been identified as a global challenge.¹³³ Despite the potentially severe impacts on agriculture and food security, international legal responses are limited. Apart from conventions that establish general obligations,¹³⁴ and the 1998 Protocol to the Convention on the Protection of the Alps, which addresses soil protection, no legally binding instruments exist that have as their primary objective the conservation, improvement and rehabilitation of soil.

49. The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, of 1994¹³⁵ is the only legally binding international agreement linking environment and development to sustainable land management. National action programmes are key

¹³⁰ Adopted in Washington, D.C., on 3 March 1973, entry into force on 1 July 1975.

¹³¹ See <http://cites.org/eng/app/appendices.php>.

¹³² See Rosalind Reeve, *Policing International Trade in Endangered Species: The CITES Treaty and Compliance* (Routledge, 2002).

¹³³ World Resources Institute, *World Resources: 1992-93* (Oxford University Press, 1992).

¹³⁴ African Convention; ASEAN Agreement.

¹³⁵ Adopted in Paris on 14 October 1994.

instruments in the implementation of the Convention. Identified gaps relate to the lack of effective implementation, the setting of standards and an enforcement mechanism.

D. Protection of freshwater resources

Regulatory framework

50. Current international law largely aims to protect freshwater resources, including groundwaters,¹³⁶ through a patchwork of global, regional and basin agreements, with certain general principles and customary rules applicable to the normative and institutional gaps therein. The global convention which most directly governs the uses of fresh water is the Convention on the Law of the Non-Navigational Uses of International Watercourses (the Watercourses Convention) of 1997. The Watercourses Convention promotes the optimal and sustainable utilization of international watercourses through a number of provisions that establish broad duties for States with respect to freshwater governance.¹³⁷

51. The transversal nature of fresh water as an object of legal regulation is evident in the patchwork of other treaties and instruments governing aspects of its use, which differ substantially in their focus. This range of treaties includes multilateral environmental agreements of a universal scope.¹³⁸ Further diversity of obligations relating to fresh water arises from a range of binding instruments at the regional or basin levels.¹³⁹ While some treaties governing fresh water may codify or operationalize general principles relevant to environmental protection,¹⁴⁰ this patchwork is also supplemented by a number of non-binding instruments that aim to codify or progressively develop customary rules at the universal level, such as Sustainable Development Goal 6.¹⁴¹

Normative and institutional gaps

52. The Watercourses Convention is insufficient as a global governance mechanism for the protection of freshwater resources. Article 1 expressly excludes from the Convention's scope "the uses of international watercourses for navigation".¹⁴²

¹³⁶ In 2008, ILC adopted the draft articles on the law of transboundary aquifers aimed at ensuring the equitable and reasonable utilization of transboundary aquifers or aquifer systems. See *Yearbook of the International Law Commission, 2008*, vol. II, Part Two, para. 53. See also resolution 63/124, annex. While, as of the time of writing, the General Assembly has not yet decided on the future form of the draft articles, they have inspired at least one regional agreement on the utilization of groundwater resources.

¹³⁷ See Convention on the Law of the Non-Navigational Uses of International Watercourses (Watercourses Convention), preamble (recalling arts. 1, 2, and 13 (1) (a) of the Charter of the United Nations, Rio Declaration and Agenda 21), and Watercourses Convention, arts. 5 and 6 (advancing beyond the Helsinki Rules on the Uses of the Waters of International Rivers).

¹³⁸ See Convention on Wetlands of International Importance especially as Waterfowl Habitat; Convention Concerning the Protection of the World Cultural and Natural Heritage; Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention); CBD; UNCCD; UNFCCC; POPs Convention; Paris Agreement.

¹³⁹ See European agreement (Convention on the Protection of the Rhine, 1999), African agreement (Niger Basin Water Charter, 2008), Asian agreement (Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, 1995), and bilateral treaty in the Americas (Great Lakes Water Quality Agreement, 1972).

¹⁴⁰ See, for example, Watercourses Convention, arts. 5 and 6.

¹⁴¹ See, generally, Leila M. Harris, Lucy Rodina and Cynthia Morinville, "Revisiting the human right to water from an environmental justice lens", *Politics, Groups and Identities Journal*, vol. 3, No. 4 (2015), p. 660.

¹⁴² See also commentary on the draft articles of the Watercourses Convention, para 4, in *Yearbook of the International Law Commission, 1994*, vol. II, Part Two, pp. 89–90.

Pollution of fresh water from vessels falls within a complex arrangement of legal regimes, giving rise to normative gaps. Moreover, as a framework convention, its prescriptions are inherently broad and sometimes merely encouraging in nature. This ensures maximum flexibility for States when they adopt implementing agreements with respect to individual watercourses, but in so doing sacrifices the benefits of more specific guidance as to the resulting form of freshwater protection. In particular, despite the aspirations of article 3, the Convention does not provide any binding directives as to the establishment of joint enforcement or dispute settlement mechanisms to ensure that the principle of equitable and reasonable utilization is given effect.¹⁴³ The list of factors to be assessed in this utilization, found in article 6, paragraph 1, is non-exhaustive, leaving to States the difficult task of reaching subsequent agreement as to specific factors applicable to the use of their shared watercourses.

53. The interaction of provisions such as articles 6 (“Factors relevant to equitable and reasonable utilization”) and 7 (“Obligation not to cause significant harm”) of the Convention is to be interpreted taking into consideration the development of international environmental law. Taking into account the relevant legal context may allow for an adaptive and dynamic interpretation and application of water agreements.¹⁴⁴ Yet it must be recalled that this analytical process arises directly from the fragmented nature of the current framework of freshwater governance and the need to fill gaps resulting from this relative lack of legal integration.

54. The gaps in the current mosaic of binding and non-binding instruments relating to the protection of freshwater resources are further complicated by the multidirectional manner in which these instruments interact. In other words, while the gaps in the Watercourses Convention may be supplemented by subsequent agreements between riparian States (i.e., States with freshwater resources), so too may the Convention serve to fill gaps in existing agreements between these States.¹⁴⁵ Ambiguity in the aforementioned provisions may therefore pose particular problems for regions where river or aquifer systems have not yet been the subject of binding and specific legal agreements among riparian States.

55. Such fragmentation weakens the normative scope of environmental principles in the field of water resources protection.¹⁴⁶ This gap leads to uncertainties in the applicability of these principles. In this respect, the International Court of Justice’s conservative vision of the precautionary approach in the *Pulp Mills on the River Uruguay* case¹⁴⁷ reflects the legal uncertainties surrounding the application of such principles in the field of freshwater resources.

E. Protection of oceans and seas

56. Oceans comprise approximately 70 per cent of the Earth’s surface. The health of the ocean is of vital importance to marine ecosystem functioning and productivity, which includes ensuring sustainable fisheries, coastal protection and carbon sequestration and achieving food security. A number of instruments have been adopted to address various pressures on the marine environment.

¹⁴³ See also Watercourses Convention, arts. 8 (2), 24 and 32 (2).

¹⁴⁴ See Laurence Boisson de Chazournes, *Fresh Water in International Law* (Oxford University Press, 2013), p. 143.

¹⁴⁵ See Watercourses Convention, art. 3.

¹⁴⁶ See Statute of the River Uruguay, chap. X; Charter of Waters of the Senegal River.

¹⁴⁷ *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, *I.C.J. Reports 2010*, p. 14.

57. The most comprehensive of these instruments is the United Nations Convention on the Law of the Sea of 1982, which sets out the legal framework within which all activities in the oceans and seas must be carried out.¹⁴⁸ The regime established by the Convention is based on a zonal approach, under which the rights and obligations of flag, coastal and port States, and applicable rules, depend on the particular maritime zone in which an activity is taking place as well as the type of activity in question. The Convention provides for the general obligation to protect and preserve the marine environment and requires States to take all measures necessary to prevent, reduce and control the pollution of the marine environment from any source. These measures must include those necessary to protect and preserve rare or fragile ecosystems as well as the habitats of depleted, threatened or endangered species and other forms of marine life. The Convention includes provisions on enforcement with respect to the various sources of pollution, as well as provisions on cooperation and coordination for the protection and preservation of the marine environment. It also codifies, *inter alia*, the duty not to transfer damage or hazards or transform one type of pollution into another,¹⁴⁹ as well as the obligation of notification of imminent or actual damage,¹⁵⁰ and includes obligations to monitor the risks or effects of pollution and assess the potential effects of activities.¹⁵¹

58. Part XII of the Convention specifically refers to six sources of pollution, in addition to the introduction of alien or new species: pollution from land-based sources; pollution from seabed activities subject to national jurisdiction; pollution from activities in the International Seabed Area; pollution from dumping; pollution from vessels; and pollution from or through the atmosphere. A number of global and regional instruments applying to these sources and activities, some of which are legally binding, have been adopted by competent international organizations.¹⁵² Other complementary instruments encompass in their scope marine biodiversity¹⁵³ or address the management of marine living resources.¹⁵⁴ These instruments have tended to reflect a sectoral approach to the development and enforcement of rules for the protection and preservation of the marine environment. In that context, each sector focuses on its unique issues, priorities and interests, which hampers the implementation of integrated approaches such as ecosystem approaches, and the application of cross-sectoral environmental principles and concepts that have developed since the Convention was negotiated. Furthermore, with regard to land-based sources of pollution, legal and institutional responses are at both the global and regional levels, with the latter consisting of 18 regional seas programmes. The regional seas framework does not have a centralized governance: 7 of the programmes are administered by the United Nations Environment Programme (UNEP) while 11 operate independently.¹⁵⁵ Regional seas treaties reveal normative gaps concerning the

¹⁴⁸ See also resolution 72/73.

¹⁴⁹ UNCLOS, art. 195.

¹⁵⁰ *Ibid.*, art. 198.

¹⁵¹ *Ibid.*, arts. 204–206.

¹⁵² See, for example, Convention on the Prevention of Marine Pollution by Dumping of Waster and Other Matter (1972 London Convention) and its 1996 Protocol; International Convention for the Prevention of Pollution from Ships and its 1978 Protocol; Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea; Global Programme of Action for the Protection of the Marine Environment from Land-based Activities.

¹⁵³ See, for example, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); Bonn Convention; CBD.

¹⁵⁴ See, for example, Code of Conduct for Responsible Fisheries (FAO Code of Conduct).

¹⁵⁵ These include, for example, the Baltic Marine Environment Protection Commission and the Regional Programme of Action for the Protection of the Marine Environment from Land-based Activities in the Red Sea and the Gulf of Aden. See also UNEP, “Why does working with regional seas matter?”, available at www.unenvironment.org/explore-topics/oceans-

control of pollution from seabed activities subject to national jurisdiction, as such treaties contain only very general and often limited obligations regarding the environmental impact assessment of proposed activities.¹⁵⁶ In addition, coordination and cooperation among the regional seas frameworks and relevant global multilateral environmental agreements could be further enhanced.

59. The conservation and management of marine living resources are governed by a range of instruments in addition to the United Nations Convention on the Law of the Sea.¹⁵⁷ Most fishing takes place in areas under national jurisdiction. In this regard, the Convention provides coastal States with sovereign rights over marine living resources in their respective exclusive economic zones and sets out the duty to conserve and manage such resources to ensure their sustainable use. On the high seas, the principal responsibilities of conservation and management fall upon flag States. States are also required to cooperate with each other in the conservation and management of living resources in the areas of the high seas, including through the establishment of regional fisheries management organizations. This model has had varying levels of success in meeting the objectives of sustainable fish stock management in the face of threats such as unsustainable and/or destructive fishing practices, climate change and environmental pollution from various sources, in particular marine debris, including in the form of abandoned, lost or otherwise discarded fishing gear. The general duty of precaution in the face of scientific uncertainty is being increasingly acknowledged in this regard.¹⁵⁸

60. The Secretary-General has stressed the importance of the effective implementation of the legal framework established by the Convention and its implementing agreements in order to achieve Sustainable Development Goal 14.¹⁵⁹ Continued efforts have been made to strengthen this framework, including through additional instruments to address emerging challenges. In particular, the General Assembly decided to develop a legally binding instrument under the Convention on the conservation and sustainable use of marine biodiversity beyond national jurisdiction.¹⁶⁰ There have also been increased efforts to enhance international cooperation and coordination, including of a cross-sectoral nature, in support of the implementation of relevant instruments, for example through UN-Oceans. At the global level, the Assembly, through its annual review of developments in ocean affairs and the law of the sea, provides a global mechanism for further enhancing integrated and coordinated approaches.

61. As noted in the context of the United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development (the Ocean Conference), held in 2017,¹⁶¹ a number of challenges remain to be addressed, in particular those resulting from predominantly sectoral approaches to ocean

[seas/what-we-do/working-regional-seas/why-does-working-regional-seas-matter.](#)

¹⁵⁶ See, for example, Framework Convention for the Protection of the Marine Environment of the Caspian Sea, art. 17.

¹⁵⁷ See, for example, Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas; FAO Code of Conduct; Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (FSA); Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.

¹⁵⁸ See *Southern Bluefin Tuna (New Zealand v. Japan; Australia v. Japan)*, *Provisional Measures*, Order of 27 August 1999, p. 280, paras. 77 and 79.

¹⁵⁹ See A/71/733, paras 15–19.

¹⁶⁰ See resolution 69/292, para. 2.

¹⁶¹ See also <https://oceanconference.un.org/commitments/?id=16758>.

management and the ineffective implementation and compliance that partly stems from a lack of coordination and capacity. The effectiveness of applicable international legal instruments is affected by the level of participation by States. Gaps also exist with regard to the material or geographical scope of relevant instruments; for example, while some aspects of marine debris, plastics and microplastics are covered by several global, regional and national instruments, none of them, other than some regional action plans on marine litter, are specifically dedicated to these issues. Some geographic areas remain unaddressed by regional instruments relevant to the implementation of aspects of the United Nations Convention on the Law of the Sea and the 1995 Fish Stocks Agreement. Implementation of legal and policy instruments is further affected by regulatory and administrative structures at the national level. Policies and national legislation related to ocean affairs are still largely fragmented in many States, and their implementation suffers from insufficient intersectoral coordination and the constraints resulting from competing interests. Assessments of implementation remain incomplete owing to a low level of responses to reporting requirements and limited available information on how States have followed up on their obligations and commitments. Formal, multilateral compliance committees, as seen under multilateral environmental agreements, are not common with regard to the law of the sea.

F. Regulation of hazardous substances, wastes and activities

62. Over the years, industrial and technological developments have resulted in the production and use of hazardous substances, the generation of hazardous wastes as a by-product and the undertaking of activities that pose potential risks to human health and the environment. High-level political concern has been reflected in Principle 6 of the Stockholm Declaration,¹⁶² Principle 14 of the Rio Declaration, Agenda 21: Programme of Action for Sustainable Development,¹⁶³ the outcome document of the United Nations Conference on Sustainable Development (the Rio+20 Conference), entitled “The future we want”, and Sustainable Development Goal 12.¹⁶⁴

Hazardous substances

63. Hazardous substances include industrial chemicals and pesticides. International legal instruments have addressed the matter through a listing system of substances deemed hazardous because of their inherent characteristics,¹⁶⁵ through the regulation of specific substances¹⁶⁶ or through the regulation of trade,¹⁶⁷ and have focused on accident prevention, preparedness and response; the control of production and use; the provision of information, including registration, classification, labelling and packaging; transportation and transboundary movements; and exposure in the working environment.

64. The existing instruments addressing accident prevention, preparedness and response are largely regional, covering Europe and North America,¹⁶⁸ and were

¹⁶² Stockholm Declaration.

¹⁶³ Agenda 21, chaps. 19 and 20.

¹⁶⁴ Sustainable Development Goals, targets 12.4 and 12.5.

¹⁶⁵ Directive 85/337/EEC of the European Parliament and of the Council of 27 June 1985 on the assessment of the effects on certain public and private projects on the environment; Espoo Convention.

¹⁶⁶ Vienna Ozone Convention and its 1987 Montreal Protocol; Kyoto Protocol; Cartagena Protocol; POPs Convention; Minamata Convention on Mercury.

¹⁶⁷ Rotterdam Convention.

¹⁶⁸ Except for ILO Convention No. 174 on the prevention of major industrial accidents, see for example, Directive 2012/18/EU of the European Parliament and of the Council of 4 July

developed in response to major industrial accidents.¹⁶⁹ Three global instruments regulate or prohibit the production and use of specific chemicals, namely, the Montreal Protocol on Substances that Deplete the Ozone Layer, the Stockholm Convention on Persistent Organic Pollutants¹⁷⁰ and the Minamata Convention on Mercury.¹⁷¹ International rules for the registration, classification, labelling and packaging of hazardous substances are critical to addressing the associated human health and environmental risks. Labelling and packaging requirements are contained in the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade of 1998, the Convention concerning Safety in the Use of Chemicals at Work of 1990¹⁷² and Regulation (EC) No. 1272/2008 of the European Union on classification, labelling and packaging of substances and mixtures.¹⁷³ The international framework for the regulation of international trade in chemicals and pesticides is composed of non-binding guidelines developed by the Food and Agriculture Organization of the United Nations (FAO) and the Organization for Economic Cooperation and Development (OECD) in the 1980s¹⁷⁴ and binding legal instruments such as the previously mentioned Montreal Protocol, the Minamata Convention on Mercury and the Stockholm Convention, as well as the Rotterdam Convention,¹⁷⁵ which establishes a prior informed consent procedure applicable to banned or severely restricted chemicals and severely hazardous pesticide formulations.¹⁷⁶ The international rules governing the transport of hazardous substances by different modes of transport are underdeveloped and mostly apply to the European region, except for the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL), annex 18 to the Convention on International Civil Aviation: The Safe Transport of Dangerous Goods by Air, and the Regulations for the Safe Transport of Radioactive Material of the International Atomic Energy Agency (IAEA).¹⁷⁷ The use

2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC; Convention on the Transboundary Effects of Industrial Accidents; Agreement of Cooperation Between the United States of America and United Mexican States Regarding Pollution of the Environment Along the Inland International Boundary by Discharges of Hazardous Substances.

¹⁶⁹ Such as those in Seveso, Italy (1976), Bhopal, India (1984), Basel, Switzerland (1986) and Baia Mare, Romania (2000).

¹⁷⁰ It initially targeted twelve chemicals but provided for subsequent additions through the Persistent Organic Pollutants Review Committee, see POPs Convention, art. 8.

¹⁷¹ Minamata Convention on Mercury, art. 4 (1), annex A, part I.

¹⁷² ILO Convention No. 170 on safety in the use of chemicals at work.

¹⁷³ See Rotterdam Convention, art. 13 (2). Other instruments such as the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), the schemes developed by UNEP, ILO and the World Health Organization (WHO) under the International Programme for Chemical Safety (IPCS), including WHO, *The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification: 2009* (2009) and WHO and FAO, *International Code of Conduct on the Distribution and Use of Pesticides: Guidelines for Registration of Pesticides* (2010); WHO and FAO, *Guidelines on Good Labelling Practice for Pesticides* (2015) are voluntary.

¹⁷⁴ FAO, International Code of Conduct on Pesticides Management (Conference resolution 10/85); Organization for Economic Cooperation and Development (OECD), Recommendation on the Council concerning Information Exchange related to Export of Banned or Severely Restricted Chemicals OECD/Legal/0210, 1984.

¹⁷⁵ Rotterdam Convention.

¹⁷⁶ See *ibid.*, arts. 3 (1), 10, 11 and annex III.

¹⁷⁷ Several legally binding instruments have been adopted within the European region dealing with transport by air, rail and inland waterways – see, for example, European Agreement concerning the International Carriage of Goods by Road; Convention Concerning the International Carriage of Goods by Rail and its 2015 Regulations concerning the International Carriage of Dangerous Goods by Rail; Economic Commission for Europe, European Agreement concerning International Carriage of Dangerous Goods by Inland Waterways.

of certain hazardous substances in the working environment is strictly regulated through several legally binding instruments adopted under the auspices of the International Labour Organization (ILO).¹⁷⁸

Hazardous wastes

65. The current international regime governing hazardous wastes focuses mainly on their disposal and transboundary movements and trade. It is acknowledged, however, that an approach that includes the minimization or prevention of the generation of waste at the source would provide a more holistic and effective response to the problem.¹⁷⁹ Of note, the European Union, at the regional level, has established quantitative targets regarding the generation of certain categories of wastes.¹⁸⁰

66. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal of 1989 is the most comprehensive global treaty dealing with hazardous wastes and other wastes (household wastes). The Convention focuses primarily on the control of transboundary movements but also aims at ensuring the minimization of waste generation as well as its environmentally sound management. International focus on the transboundary movement of and trade in hazardous wastes arose out of incidents of illegal trafficking in toxic substances and wastes and the dumping of such products in developing and Eastern European countries in the late 1980s.¹⁸¹ Several regional agreements were subsequently adopted to complement the Basel Convention.¹⁸² The Basel Convention establishes a strict regime for transboundary movements of wastes, based on a prior informed consent procedure requiring the notification of concerned States, the provision of specified information in the notification and the receipt of consent before movement.¹⁸³ An amendment seeking to ban hazardous waste exports for final disposal and recycling from Annex VII parties (members of the European Union, OECD and Liechtenstein) to non-Annex VII parties (mainly developing countries), adopted in 1995,¹⁸⁴ has yet to enter into force at the international level, although it has been implemented by many parties. The Convention's liability and compensation protocol adopted in 1999 also has yet to enter into force.¹⁸⁵

67. The disposal of wastes into specific environmental media is regulated by several global and regional legal instruments, with disposal at sea being more extensively

¹⁷⁸ See, for example, ILO Convention No. 170 on safety in the use of chemicals at work, ILO Convention No. 155 on occupational safety and health and the working environment and ILO Convention No. 148 on working environment (air pollution, noise and vibration). Specific instruments address hazards arising from substances such as ionizing radiation, benzene, asbestos and carcinogenic substances.

¹⁷⁹ Agenda 21 and the Sustainable Development Goals.

¹⁸⁰ Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008. The decisions of the Conference of Parties to the Basel Convention have since underlined the need for future action to focus, inter alia, on prevention and minimization of generation at source as well as recycling, recovery and the active promotion and use of clean technologies, see decision V/33 (UNEP/CHW.5/29) and decision BC-10/2 (UNEP/CHW.10/BC-10/2).

¹⁸¹ See, for example, A/44/362.

¹⁸² These include Basel Convention, Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (Bamako Convention), Convention to Ban the Importation into the Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary and Management of Hazardous Wastes within the South Pacific Region (Waigani Convention).

¹⁸³ Basel Convention, art. 6.

¹⁸⁴ Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, see amendments to art. 4 (A) and annex VII.

¹⁸⁵ See Basel Protocol on Liability and Compensation for Damage resulting from the Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Protocol).

regulated compared with other media,¹⁸⁶ but legal intervention in the areas of land-based disposal as well as recycling and reuse is either minimal or non-existent. In addition, important gaps remain with respect to regional coverage as well as the regulation of the disposal of marine plastic litter and microplastics, mine tailings and associated wastes from mining operations, and wastes from deep seabed mining.¹⁸⁷ Land-based disposal is sparsely regulated at both the regional and global levels.¹⁸⁸ With regard to recovery, recycling and reuse, only the European Union, in particular through Directive 2006/12/EC and Directive 2008/98/EC, has established any legal requirements.

Hazardous activities

68. With regard to hazardous activities, international regulation has focused primarily on nuclear activities. Treaties adopted under the auspices of IAEA address the physical protection of nuclear material, the early notification of nuclear accidents, assistance in case of accidents and emergencies and nuclear safety.¹⁸⁹ The limitations of the Convention on Nuclear Safety of 1994 were starkly demonstrated by the incident at the Fukushima Daiichi nuclear power station, and in 2015 the non-binding Vienna Declaration on Nuclear Safety was adopted with a view to addressing issues related to the design, siting and safety assessment of nuclear power plants.

Normative and institutional gaps

69. There are significant gaps in the regulatory regimes of hazardous substances, wastes and activities. With regard to hazardous substances, these include the absence of global rules that address accident prevention, preparedness and response; largely non-binding international classification, labelling and packaging systems; and the fact that the frameworks regarding the transport of hazardous substances are mainly regional in nature. With regard to hazardous wastes, international rules have predominantly focused on the disposal and transboundary movements of such wastes rather than minimizing the generation of wastes at the source,¹⁹⁰ and lack any quantitative restrictions within specific time frames. It may be noted, however, that the Basel Convention provides a basis to address the minimization of the generation of wastes at the source. The absence of an operative global liability and compensation regime with respect to the transboundary movements of hazardous wastes is a major gap in the international legal framework. Finally, in the area of hazardous activities, focus has been on nuclear activities, but even here significant gaps exist, especially with respect to non-military nuclear activities, as well as limitations regarding legally binding global rules, principles and standards relating to the design, siting and safety of nuclear power plants.

¹⁸⁶ See Bamako Convention, art. 4 (2); South Pacific Nuclear Free Zone Treaty (Rarotonga Treaty), art. 7; Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea Treaty), art. 10 (1); OSPAR Convention, art. 4 and annex II; 1972 London Convention, art. IV and its 1996 Protocol.

¹⁸⁷ See “Report of the thirty-eighth Consultative Meeting of the Contracting Parties to the London Convention and the eleventh Meeting of the Contracting Parties to the London Protocol”, document LC 38/16.

¹⁸⁸ There are some instruments such as Regulation (EC) No. 1137/2008 and Council Directive 99/31/EC of the European Parliament and of the Council; Espoo Convention, arts. 2, 3 and 5; POPs Convention, art. 6; Minamata Convention on Mercury, arts. 9, 11 and 12.

¹⁸⁹ See Convention on the Physical Protection of Nuclear Material; Convention on Early Notification of a Nuclear Accident; Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency; Convention on Nuclear Safety; and 1997 Joint Convention on Safety of Spent Fuel Management and the Safety of Radioactive Waste Management (36 ILM 1431).

¹⁹⁰ Sands and others, *Principles of International Environmental Law*, p. 613.

70. The proliferation of instruments and the fragmentation in the regulatory regimes create the need for institutional coordination and cooperation, as well as the implementation of the various legal instruments in a mutually supportive manner. Important steps have been taken to enhance coordination and cooperation among the Basel, Rotterdam and Stockholm Conventions so as to ensure mutual supportiveness. The “synergies process” launched in 2008/09 by the three Conferences of the Parties of the Basel, Rotterdam and Stockholm Conventions aims at strengthening the implementation of the three Conventions at the national, regional and global levels.

IV. Environment-related instruments

A. Trade instruments

71. WTO is the primary focal point at the nexus of trade and environment. The WTO Appellate Body has been called upon to address several disputes concerning environment-related trade measures, and normative gaps have been evident in its reluctance to apply environmental principles to justify measures that are inconsistent with trade obligations (unless expressly prescribed in the relevant WTO agreement).¹⁹¹ The mutual supportiveness of trade and environment has been referenced in environmental treaties featuring trade components.¹⁹² However, the Doha Round of WTO negotiations has spent 17 years at an impasse over how to apply that principle. The significant challenge of reaching consensus on the implementation of mutual supportiveness of trade and environment suggests a widening gap between these two normative regimes.

B. Investment instruments

72. Clauses referring to environmental concerns are rare in bilateral investment treaties, but more common in multilateral pacts that include investment provisions. State practices regarding environmental clauses in treaties vary widely: many States do not employ such clauses in investment treaties; a few developed States have systematically begun including environmental clauses in all of their investment treaties; and several States appear to permit the inclusion of environmental clauses in investment treaties concluded with States that express a preference for such clauses.¹⁹³ Newly concluded investment treaties now tend to include environmental clauses, with such evolution particularly evident in Africa.¹⁹⁴ From a global perspective, however, in recent years the frequency of approaches that include references to environmental concerns in investment agreements has declined, including the use of clauses that reserve policy space for environmental regulation and broader references in treaty preambles.¹⁹⁵ Normative gaps arise because the specific environmental concerns

¹⁹¹ See, for example, *European Communities – Measures concerning Meat and Meat Products (Hormones)*, WT/DS26/AB/R, 16 January 1998 (concerning the precautionary principle and the agreement on the application of sanitary and phytosanitary measures).

¹⁹² See, for example, Rotterdam Convention; Cartagena Protocol; POPs Convention; Minamata Convention on Mercury.

¹⁹³ See Kathryn Gordon and Joachim Pohl, “Environmental concerns in international investment agreements: a survey”, OECD Working Paper on International Investment 2011/01 (2011), p. 5.

¹⁹⁴ See, for example, Supplementary Act A/SA.3/12/08 Adopting Community Rules on Investment and the Rules on Investment and the Modalities for their Implementation with the Economic Community of West African States; 2012 Southern African Development Community Model Bilateral Investment Treaty; Pan-African Investment Code.

¹⁹⁵ See Gordon and Pohl, “Environmental concerns in international investment agreements”, p. 6.

explicitly addressed in these agreements are limited, and have generally not evolved to include more recent concerns such as climate change and biodiversity.¹⁹⁶

C. Intellectual property instruments

73. Exclusive rights conferred by patents, plant variety rights and utility models can cover renewable energy technologies,¹⁹⁷ medicines for new illnesses that arise as a result of new climates and new crops bred to flourish in places no longer suitable for traditional plants.¹⁹⁸ The patenting of plants and plant varieties has caused major changes in farming practices, inhibiting the rights of farmers to sow, save, reuse and sell their seeds and demonstrating a normative gap between patent law and the plant-breeders' rights regimes which promote these rights.¹⁹⁹ The privatization of plant and animal germ plasm through patents and other forms of intellectual property has highlighted a gap between WIPO institutional norms that promote innovation and the provisions of the Convention on Biological Diversity regarding access and benefit-sharing, the rights of traditional knowledge holders and biodiversity conservation.²⁰⁰ The requirement under the Agreement on Trade-Related Aspects of Intellectual Property Rights (the TRIPS Agreement) of 1994 to protect property rights regarding new plant varieties may also promote the innovation of genetically modified organisms.²⁰¹ Such developments raise questions concerning gaps between the regimes of the TRIPS Agreement and the Convention on Biological Diversity, including the latter's requirement to recognize the value of the knowledge, innovations and practices of local communities relevant to the sustainable use of biodiversity.²⁰² Gaps are also apparent in the links between the TRIPS Agreement and the provisions of the Convention on Biological Diversity that establish principles for access to and the sharing of the benefits from genetic resources.²⁰³

D. Human rights instruments

74. Environmental degradation interferes with the enjoyment of a broad range of human rights, including those related to housing, water and sanitation, food, health, development and an adequate standard of living. Under international human rights law, States have an obligation to prevent foreseeable human rights harms, including

¹⁹⁶ Ibid., p. 24.

¹⁹⁷ See Eric L. Lane, "Legal aspects of green patents", in Adree Kirchner and Iris Kirchner-Freis, eds., *Green Innovations and IPR Management* (Kluwer Law International, 2013), p. 5021.

¹⁹⁸ See Claudio Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity* (Edward Elgar Publishing, 2011), pp. 60–74.

¹⁹⁹ See Center for International Environmental Law, *A Citizen's Guide to WIPO* (2007), p. 3. Available at www.ciel.org/wp-content/uploads/2015/03/CitizensGuide_WIPO_Oct07.pdf.

²⁰⁰ Ibid., p. 4.

²⁰¹ Ibid., p. 33. See also Simon Walker, *The TRIPS Agreement, Sustainable Development and the Public Interest*, Environmental Policy and Law Paper No. 41 (IUCN, 2001), p. xii. Available at <https://portals.iucn.org/library/sites/library/files/documents/EPLP-041.pdf>.

²⁰² Referring to article 8 (j) of CBD, see David Downes, "Using intellectual property as a tool to protect traditional knowledge: recommendations for next steps", discussion paper prepared for the Convention on Biological Diversity Workshop on Traditional Knowledge (Madrid, November 1997), p. 9. See also A. Gupta, "Securing traditional knowledge and contemporary innovations: can global trade links help grassroots innovations?", paper presented at the World Trade Forum, University of Bern, 1999.

²⁰³ See also Marci Baranski, "International Treaty on Plant Genetic Resources for Food and Agriculture (2001)", Arizona State University Embryo Project Encyclopedia, 7 October 2013. Available at <https://embryo.asu.edu/pages/international-treaty-plant-genetic-resources-food-and-agriculture-2001>.

those caused by environmental degradation. Human rights instruments further reflect a wide array of principles applied in the context of environmental law, including solidarity, accountability, transparency, participation, access to information and remedies, the precautionary principle, equality and equity. In his report setting out a framework of principles on human rights and the environment, the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment articulates the application of existing human rights norms in the environmental context.²⁰⁴

75. Importantly, many human rights instruments explicitly reference the environment or environmental concerns. The Convention on the Rights of the Child refers to environmental pollution and environmental sanitation as issues that must be addressed to ensure the right to health, and also calls for education to help children develop a respect for the natural environment.²⁰⁵ Numerous regional human rights treaties include the right to a healthy environment,²⁰⁶ as do some environmental democracy treaties.²⁰⁷ General Assembly resolution 70/169 and general comment No. 15 (2002) of the Committee on Economic, Social and Cultural Rights articulate a right to water and sanitation that derives from but is not explicitly present in the International Covenant on Economic, Social and Cultural Rights.²⁰⁸

76. In a series of resolutions, the Human Rights Council has addressed the issues of human rights and the environment generally, and also has focused specifically on environment, toxic substances and climate change, among other issues, explicitly noting the connections between a healthy environment and the effective enjoyment of human rights.²⁰⁹ Such resolutions, in tandem with the work of other treaty bodies,²¹⁰ have raised awareness of environmental health and sustainability as a fundamental prerequisite to the enjoyment of human rights and the realization of gender equality and the empowerment of women. Regional courts may fill gaps between sources of human rights law and environmental law, as seen in the finding of the Inter-American Court of Human Rights in 2017 that States must take measures to prevent significant environmental harm to individuals inside and outside their territory.²¹¹

²⁰⁴ See A/HRC/37/59.

²⁰⁵ See Convention on the Rights of the Child, arts. 24 and 29.

²⁰⁶ See for example, African Charter on Human and Peoples' Rights, Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights (San Salvador Protocol), Arab Charter on Human Rights, and ASEAN Human Rights Declaration.

²⁰⁷ The Aarhus Convention and the Escazú Agreement.

²⁰⁸ See resolution 70/169 and the Committee on Economic, Social and Cultural Rights, general comment No. 15 (2002) on the right to water.

²⁰⁹ See, for example, Human Rights Council resolutions 38/4 on human rights and climate change; 37/8 on human rights and the environment; 27/23 on the Mandate of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes. See also Dinah Shelton, "Human rights, health and environmental protection: linkages in law and practice", Health and Human Rights Working Paper Series, No. 1 (World Health Organization, 2002).

²¹⁰ See, for example, HRI/GEN/1/Rev.3; Committee on Economic, Social and Cultural Rights, general comment No. 12 (1999) on the right to adequate food; general comment 4 (1991) on the right to adequate housing, para. 5; CEDAW/C/2000/II/Add.7, para. 38.

²¹¹ Inter-American Court of Human Rights, *The Environment and Human Rights (State Obligations in Relation to the Environment in the Context of the Protection and Guarantee of the Rights to Life and to Personal Integrity (Interpretation and Scope of Articles 4 (1) and 5 (1) of the American Convention on Human Rights)*, Advisory Opinion OC-23/18, (Ser. A) No. 23, 15 November 2017.

V. Gaps relating to the governance structure of international environmental law

77. The structure of international environmental governance is characterized by institutional fragmentation and a heterogeneous set of actors. Although States remain the primary actors, international environmental governance is a multi-actor governance system that includes international institutions, treaty bodies, non-governmental organizations, the scientific community and the private sector.

78. A multiplicity of global and regional international institutions participate in the task of international environmental law-making and implementation. They comprise entities of the United Nations system and treaty bodies established by multilateral environmental agreements. In the aftermath of the United Nations Conference on the Human Environment (the Stockholm Conference), UNEP was established to promote international cooperation in the field of the environment and to provide general policy guidance for the direction and coordination of environmental programmes within the United Nations system.²¹² The role of UNEP as the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as the authoritative advocate for the global environment was reaffirmed in Agenda 21, the Nairobi Declaration on the Role and Mandate of UNEP²¹³ and the outcome document of the Rio+20 Conference, entitled “The future we want”.²¹⁴ World leaders at the Rio+20 Conference and the General Assembly in 2012 decided to strengthen and upgrade UNEP and to establish universal membership in its Governing Council, which was subsequently renamed the United Nations Environment Assembly by the General Assembly in 2013. Many other United Nations system institutions have acquired considerable environmental responsibilities since UNEP was established. These include United Nations programmes and funds such as the United Nations Development Programme and the United Nations Human Settlements Programme (UN-Habitat) as well as specialized agencies such as FAO, IMO, IAEA, ICAO and ILO. In addition, the World Bank and the regional development banks have established substantial environmental portfolios.²¹⁵

79. After the Stockholm Conference, international environmental law-making saw the proliferation of multilateral environmental agreements and the emergence of treaty-based bodies. According to the Environmental Law Information Service (ECOLEX), there are currently more than 500 multilateral environmental agreements,²¹⁶ and it has been estimated that some 200 or so treaty-based institutions were established in the two decades after the Stockholm Conference.²¹⁷ Such treaty bodies include supreme policymaking organs, which are invariably Conferences of the Parties or Meetings of the Parties that are responsible for the further development of the treaty regime as well as for the supervision and review of treaty implementation; secretariats that carry out administrative and support functions; and, in some cases, quasi-judicial and compliance mechanisms and procedures aimed at promoting compliance and addressing cases of non-compliance with treaty obligations. Moreover, several multilateral environmental agreements have been

²¹² See resolution 2997 (XXVII), para. 2.

²¹³ *Official Records of the General Assembly, Fifty-second Session, Supplement No. 25 (A/52/25)*, annex, decision 19/1, annex.

²¹⁴ See resolution 66/288, para. 88.

²¹⁵ See A/61/583, para. 37.

²¹⁶ See www.ecolex.org.

²¹⁷ Biermann, “The emerging debate on the need for a world environment organization”, p. 10.

negotiated under the auspices of and are administered by UNEP and other institutions of the United Nations system.

80. The proliferation of multilateral environmental agreements and the resultant distinct and separate mandates ignore the unity, interconnectedness and interdependence of the Earth's ecosystem. They also create potential for overlap and conflict, institutional and policy incoherence and increased financial and administrative burdens on States parties.²¹⁸ Significant efforts, however, are made to ensure mutual supportiveness among such agreements either in their texts (e.g., through cross references with other agreements or clarification of respective scopes) or in the way they are further developed and implemented (e.g., through decisions and/or resolutions regarding coordination and cooperation among agreements). More efforts could be made to establish or strengthen mechanisms to harness interlinkages and promote synergies for more effective implementation.²¹⁹ The clustering of related multilateral environmental agreements, for example those dealing with atmosphere, or biodiversity, or chemicals and wastes, would improve policy coherence and ensure mutually supportive implementation. The "synergies process" launched by the Conferences of the Parties of the Basel, Rotterdam and Stockholm Conventions in 2008/09, as well as the UNEP project entitled "Environmental treaties programme – realizing synergies for biodiversity" launched in November 2017, are commendable initiatives in this regard.²²⁰

81. The significant increase in the number of institutions with environmental responsibilities in the United Nations system, the imperative of integrating the environment and development and the proliferation of treaty-based institutions established by multilateral environmental agreements have created the need for effective coordination among relevant United Nations system institutions as well as the institutions created by the agreements. Indeed, the High-level Panel on United Nations System-wide Coherence in the Areas of Development, Humanitarian Assistance and the Environment underlined the fact that fragmented institutional structures do not offer an operational framework to address global issues.²²¹ Institutional fragmentation and a lack of coordination are key challenges with regard to the current international environmental governance. Previous and current institutional arrangements for coordination within the United Nations system, such as the Administrative Committee on Coordination, which was subsequently renamed the United Nations System Chief Executives Board for Coordination, the Inter-Agency Committee on Sustainable Development and the Environment Management Group, have proved limited in effectiveness or scope.²²² There have been concerted efforts, however, through the Environment Management Group, to build coherence among the biodiversity and chemicals regimes.

82. Enhanced coordination might be necessary not only within the field of international environmental law, but also between multilateral environmental

²¹⁸ See for example, B. L. Hicks, "Treaty congestion in international environmental law: the need for greater international coordination", *University of Richmond Law Review*, vol. 32, No. 5 (1999), p. 1659.

²¹⁹ A study by Oberthur and Gehring noted that institutional interaction led to synergy and the improved institutional effectiveness in more than 60 per cent of the case studies of international and European environmental policy, see Sebastian Oberthur and Thomas Gehring, eds., *Institutional Interaction in Global Environmental Governance: Synergy and Conflict among International and EU Policies* (MIT Press, 2006).

²²⁰ See United Nations Environment Assembly resolution 2/17; CBD COP decision XIII/24.

²²¹ See A/61/583, para. 35.

²²² See, generally, Adil Najam, Mihaela Papa and Nadaa Taiyab, eds., *Global Environmental Governance: A Reform Agenda* (International Institute for Sustainable Development, 2006); Sands and others, *Principles of International Environmental Law*.

agreements and other instruments that directly or indirectly affect the environment, such as trade law, investment law and intellectual property rights regimes.

83. Institutional fragmentation and weak coordination between treaties can be addressed through various means, such as: (a) creating clusters and synergies between conventions; (b) mapping existing global and regional action plans and agreements to create an overview of coverage and identify interlinkages; (c) avoiding duplication of reporting and/or monitoring processes by using the same reporting channels and not creating additional burdens (“integrated reporting”); (d) sharing lessons learned and best practices; (e) developing implementation guidelines for multilateral environmental agreements; and (f) sharing information among the different scientific bodies that support the work of related multilateral environmental agreements. Potential conflicts between treaty regimes can be managed by using legal means, including conflict clauses, mutual supportiveness or the application of the general rule of treaty interpretation contained in article 31, paragraph 3 (c), of the Vienna Convention on the Law of Treaties.²²³

84. The trend in international environmental governance is increasingly towards broadening the range of actors recognized as having a legitimate role in governance.²²⁴ Principle 10 of the Rio Declaration, Agenda 21 and the outcome document of the Rio+20 Conference, entitled “The future we want”, have underlined the important role of non-State actors such as major groups, women, children and youth, indigenous peoples, non-governmental organizations, local authorities, workers and trade unions, business and industry, the scientific and technological community and farmers, as well as other stakeholders in the development and implementation of sustainable development policies. However, the scope and space for the participation of non-State actors in the international environmental legal process varies with the different treaty regimes. The preponderant mode of engagement of non-State actors is participation as observers in the negotiations that take place during the conferences of the parties to the multilateral environmental agreements, but no clear and effective rules have been developed to facilitate their input regarding the negotiation process. In specific instances, observers can participate in subsidiary bodies on an equal footing with parties, such as in partnerships structures.²²⁵ In regimes such as climate change and ozone, the scientific community has direct input into policy development through dedicated institutional mechanisms that provide independent and authoritative information upon which decisions can be based. Very few regimes provide for public participation in the non-compliance procedures established to monitor, review and verify compliance with international obligations. The Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Aarhus Convention) of 1998 provides the broadest latitude for public participation through procedural rights granted to non-State actors by States parties as well as the opportunity to participate in the Convention’s non-compliance mechanism. A similar approach was adopted in the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (the Escazú Agreement) of 2018.²²⁶ Nevertheless, compared to the international human rights mechanisms there exists a significant gap in international environmental law regarding effective participation by non-State actors in international law-making and implementation.

²²³ See A/CN.4/L.682, paras. 410–480.

²²⁴ Sands and others, *Principles of International Environmental Law*, p. 52.

²²⁵ See the various partnerships established under the Basel Convention: the Partnership for Action on Computing Equipment (PACE), the Mobile Phone Partnership Initiative (MPPI), the Household Waste Partnership.

²²⁶ Adopted in Escazú, Costa Rica, on 4 March 2018.

VI. Gaps relating to the implementation and effectiveness of international environmental law

A. National implementation

85. To be effective, international environmental norms must be implemented.²²⁷ That occurs when national laws that contain measures to implement international commitments are adopted or adapted, when it is ensured that those national measures correspond to the requirements of international law and are complied with by actors under parties' jurisdiction and control and when obligations to relevant international institutions, such as reporting, are fulfilled.²²⁸

86. The lack of effective implementation of many multilateral environmental agreements has been identified as a major gap in addressing environmental challenges.²²⁹ Many countries face challenges associated with the implementation of multiple agreements. Implementation deficits arise for different reasons, including knowledge gaps; a lack of adequate means of implementation, such as finance, capacity-building or technology; the need for facilitation for compliance; a lack of coordination between relevant government departments as well as with other sectors; insufficient monitoring and law enforcement; a lack of political will; and the inadequate engagement of different stakeholders, such as civil society and women's organizations.²³⁰ Coherence, synergy and coordination at the international level could ease implementation at the national level, as demonstrated by the "synergies process" under the Basel, Rotterdam and Stockholm Conventions, but is largely limited.²³¹ The same challenge applies at the national level, where different ministries may be responsible for the implementation of different multilateral environmental agreements.

B. Means of implementation: financial resources, technology transfer and capacity-building

87. Access to means of implementation, such as financial resources, environmentally sound technologies and technical and institutional capacities, is an important variable in the effective implementation of commitments and compliance with treaty obligations, especially for developing countries and, in some instances, countries with economies in transition. The establishment of financial mechanisms and the provision of technical and technological assistance and capacity-building to enable compliance and implementation are integral to many multilateral environmental agreements.²³² Moreover, many international organizations also

²²⁷ Bodansky, *The Art and Craft of International Environmental Law*, p. 223.

²²⁸ Sands and others, *Principles of International Environmental Law*, p. 147.

²²⁹ UNEP, "Future shape of international law to address pollution of global significance affecting the Earth's ecosystems: consolidated report of initial consideration by experts", 6 April 2018.

²³⁰ David Victor, Kal Raustiala and Eugene B. Skolnikoff, eds., *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice* (MIT Press, 1998).

²³¹ UNEP, "Future shape of international law to address pollution of global significance affecting the Earth's ecosystems".

²³² See, for example, UNFCCC, art. 11; CBD, arts. 16, 18, 20 and 21; Montreal Protocol, arts. 10 and 11; Basel Convention, arts. 10 and 14; Paris Agreement, arts. 9–11; and Minamata Convention on Mercury, arts. 13 and 14. Special Funds have also been established under the

engage in financial and technical support and capacity-building efforts as part of their programmes.²³³

88. A number of studies have noted the difficulties relating to the provision of public finance and the mobilization of private finance across multilateral environmental agreements.²³⁴ Generally, funding for implementation remains insufficient, unpredictable and incoherent, and varies considerably among the different regimes.²³⁵ On the other hand, the barriers facing the effective transfer of environmentally sound technologies include the limited information and decision-support tools required for transfer; inadequate arrangements for the protection of patents and other intellectual property rights; the lack of cooperation among governments, corporations and the financial community with regard to investing in and making available environmentally sound technologies; and the inadequacy of systems for collecting, synthesizing and reporting back information and knowledge on such technologies.²³⁶

89. Limited reporting by developed countries regarding the resources that have been provided and mobilized, the technologies that have been transferred and any other support that has been provided, as well as the lack of processes to monitor and review compliance with financial, technology transfer and capacity-building obligations, have constituted important constraints to the effective implementation of relevant treaty provisions.²³⁷ The reporting and review processes of multilateral environmental agreements play a significant role in determining whether developed countries are meeting their commitments relating to technological, technical and financial support, and failure by treaty parties to provide relevant information in national reports has a negative impact on the evaluation of the effectiveness of relevant treaty provisions.²³⁸ Recent developments in treaty-making have demonstrated deliberate efforts by governments to address this gap.²³⁹

climate and ozone regimes (Green Climate Fund and the Multilateral Fund for the Implementation of the Montreal Protocol).

²³³ The Global Environment Facility, jointly administered by the World Bank, the United Nations Development Programme (UNDP) and UNEP, not only acts as the financial mechanism for a number of multilateral environmental agreements but also provides financial resources on the basis of its own mandate such as the Capacity 21 programme of UNDP and the technical assistance and capacity-building programmes of UNEP.

²³⁴ Kamlesh Pillay, Stine Aakre and Asbjørn Torvanger, "Mobilizing adaptation finance in developing countries", 23 March 2017; Aaron Atteridge, "Will private finance support climate change adaptation in developing countries?", Stockholm Environment Institute Working Paper, No. 2011-05 (November 2011); Tom Conway, "Building capacity for resource mobilization: improving the financial conditions for implementation of the Basel Convention at the national and regional levels", available at www.slideserve.com/rozene/building-capacity-for-resource-mobilization.

²³⁵ See Ole Kristian Fauchald, *International Environmental Governance: A Legal Analysis of Selected Options*, FNI Report 16/2010 (Fridtjof Nansen Institute, 2010).

²³⁶ See Steve Halls, "Barriers to technology transfer: environmentally sound technologies and implementation of the Kyoto Protocol", available at http://unfccc.int/ttclear/events/2002_event2; United Nations, Department of Economic and Social Affairs, *Climate Change: Technology Development and Technology Transfer*, background paper prepared for the Beijing High-level Conference on Climate Change, November 2008.

²³⁷ See, generally, Marc Pallemmaerts and Jonathan Armstrong, "Financial support to developing countries for climate mitigation and adaptation: is the EU meeting its commitments", November 2009.

²³⁸ Tullio Treves and others, eds., *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements* (T.M.C. Asser Press, 2009), p. 109; Pallemmaerts and Armstrong, "Financial support to developing countries for climate mitigation and adaptation".

²³⁹ See Minamata Convention on Mercury, art. 22; Paris Agreement, art. 13.

C. Dispute settlement, compliance and enforcement mechanisms

90. Gaps relating to the implementation and effectiveness of international environmental law have appeared in several aspects of inter-State dispute settlement. In the absence of an international environmental court, disputes relating to the environment have been addressed by a variety of international courts and tribunals. In *Gabčíkovo-Nagymaros*, the International Court of Justice faced the difficult task of weighing the rights of parties under circumstances where the likelihood and extent of environmental harm remained unknown. This highlighted the paucity of rules or principles addressing unrealized harm, which is a problematic status quo in the light of the often-significant gap in time between acts and their effects on the environment.²⁴⁰ A more recent case heard by the International Court of Justice reveals some gaps in the Court's application of scientific data in environmental dispute settlement. In *Whaling in the Antarctic*, the Court's limited analysis regarding the meaning of "scientific research" has been lamented as a gap in its approach to resolving the dispute.²⁴¹ Data-intensive environmental cases before the Court have also revealed gaps in judicial practices concerning the use of experts.²⁴²

91. The practice of other intergovernmental institutions also suggests certain gaps in the settlement of environmental disputes. For example, while the Permanent Court of Arbitration designed procedural rules in 2001 specifically to facilitate the arbitration of disputes relating to the environment and natural resources, these were adopted by parties in only six cases as of November 2017, all of which related exclusively to climate law.²⁴³

92. Compliance mechanisms and procedures established within a multilateral environment agreement provide a multilateral avenue for addressing party-specific compliance challenges. At the intersection between diplomacy and law, compliance bodies do not render judicial decisions, nor do they generally enforce their findings, per se. However, they have at their disposal a variety of tools that enable them to better tailor their responses to a specific case. While some treaties have established mechanisms to monitor compliance and address cases of non-compliance,²⁴⁴ overall there remains a need to strengthen these procedures in order to promote the effective implementation of international environmental law.²⁴⁵ In addition, gaps in this context

²⁴⁰ See Mari Nakamichi, "The International Court of Justice decision regarding the Gabčíkovo-Nagymaros Project", *Fordham Environmental Law Journal*, vol. 9, No. 2 (Spring 1998), pp. 337 and 364.

²⁴¹ See also Michaela Young, "Whaling in the Antarctic (*Australia v. Japan: New Zealand intervening*): progressive judgment or missed opportunity for the development of international environmental law?", *Comparative and International Law Journal of Southern Africa*, vol. 48, No. 1 (March 2015), pp. 59 and 70.

²⁴² See, for example, Joint dissenting opinion of judges Al-Khasawneh and Simma, in *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, *Judgment, I.C.J. Reports 2010*, p. 107.

²⁴³ See Judith Levine, "A rising tide of cases: what role for arbitration and conciliation in the climate change context?", presentation for the IBA/ICC/PCA/SCC side event, Bonn, 16 November 2017, p. 10, available at <https://sccinstitute.com/media/225404/cop23-slides-judith-levine.pdf>; Permanent Court of Arbitration, "PCA participation in COP21 and Conference on Climate Change Disputes", press release, 8 December 2015, note 11; Tamar Meshel, "Optional rules for arbitration of disputes relating to natural resources and/or the environment", MPILux Working Paper, No. 1 (2017), para. 14, available at www.mpi.lu/research/working-paper-series/2017/wp-2017-1/.

²⁴⁴ See Montreal Protocol on Substances that Deplete the Ozone Layer; Kyoto Protocol.

²⁴⁵ Outlining several such means under CITES, see CITES secretariat, "CITES compliance and enforcement regime", presentation for the expert meeting on compliance with the Nagoya Protocol to CBD, Montreal, March 2012). Available at www.cbd.int/doc/meetings/abs/absem-comp-01/other/absem-comp-01-presentation-cites-en.pdf.

may be viewed in participatory terms, inasmuch as non-compliance bodies do not generally permit non-State actors to raise complaints.²⁴⁶

93. Gaps also persist in the enforcement of rights and obligations regarding the global commons and shared natural resources, such as the high seas, Antarctica²⁴⁷ and outer space.²⁴⁸ In terms of disputes concerning natural resources which do not originate from environmental treaties, practices under international trade²⁴⁹ and investment²⁵⁰ regimes also reveal gaps in the implementation and effectiveness of environmental norms. Such gaps in regime interaction may also arise insofar as many environmental treaties do not address their relationships with economic treaties, which may give rise to distinct sources of applicable law or jurisdiction in a given dispute.

D. Liability and redress for transboundary environmental damage

94. The Stockholm and Rio Declarations underlined the importance of liability and redress for transboundary environmental harm as well as the paucity of international norms on the subject.²⁵¹ This is a concern precisely because a liability and redress regime for transboundary environmental harm serves several policy objectives: first, it serves as an instrument for the internalization of the environmental costs of polluting activities by making the polluters pay; second, it incentivizes compliance with international environmental norms and standards and ensures the implementation of the precautionary and preventive principles; and finally, it ensures the redress of environmental damage through the implementation of restorative measures.²⁵² Whereas there has been a remarkable proliferation of multilateral environmental agreements since the Stockholm Conference, there has been only limited development in the area of liability and redress for transboundary environmental harm. State responsibility and international liability on the one hand, and civil liability on the other, represent the two broad categories of liability in international environmental law.

State responsibility and international liability

95. It is a basic principle of international law that a breach of an international obligation by a State constitutes an internationally wrongful act which results in the State's international responsibility.²⁵³ This fundamental principle was restated by the

²⁴⁶ A notable exception exists under the Aarhus Convention. See also Tullio Treves, "Introduction", in Tullio Treves and others, eds., *Civil Society, International Courts and Compliance Bodies* (Cambridge University Press 2005), pp. 1 and 7.

²⁴⁷ See the Antarctic Treaty, art. XI (conditioning ICJ review on consent from all concerned States). See also (with relatively limited ratifications) Protocol on Environmental Protection to the Antarctic Treaty, art. 18.

²⁴⁸ No space law instruments provide for binding and compulsory dispute settlement.

²⁴⁹ See *European Communities – Measures concerning Meat and Meat Products (Hormones)*, WT/DS26/AB/R, 16 January 1998 (demonstrating reluctance to apply environmental principles to justify trade measures).

²⁵⁰ See International Centre for Settlement of Investment Disputes, *Compañía del Desarrollo de Santa Elena S.A. v. the Republic of Costa Rica*, Case No. ARB/96/1, Final Award, 17 February 2000, paras. 71–72 (finding that environmental justifications do not affect compensation duties).

²⁵¹ Stockholm Declaration, principle 22; Rio Declaration, principle 13.

²⁵² See Jutta Brunnée, "Of sense and sensibility: reflections on international liability regimes as tools for environmental protection", *International Comparative Law Quarterly*, vol. 53, No. 2, p. 351; Sands and others, *Principles of International Environmental Law*, p. 735.

²⁵³ See, generally, James Crawford, Alain Pellet and Simon Olleson, eds., *The Law of*

International Law Commission in article 1 of its articles on the responsibility of States for international wrongful acts.²⁵⁴ The act must not only be attributable to the State under rules of international law but must also constitute a breach of an international obligation under either general international law or a treaty in force.²⁵⁵ A number of arbitral and judicial decisions have affirmed the existence of an international obligation for every State to ensure that activities within its territory or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.²⁵⁶ This general obligation was reaffirmed in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration and has been incorporated into a number of multilateral environmental agreements.²⁵⁷ State responsibility entails the obligation, in the first instance, to take measures to cease transboundary environmental harm, and in the second instance to provide reparation by, *inter alia*, redressing the damage if such harm occurs.²⁵⁸

96. The rules of State responsibility may need to be further developed if they are to play any significant role as a tool for redressing transboundary environmental harm.²⁵⁹ Currently there are some important constraints. In particular, the “due diligence” standard of care implies a demonstration of fault on the part of the State concerned since it denotes an obligation of conduct and not of result.

97. On the other hand, international liability for transboundary environmental harm is not based on the existence of an internationally wrongful act.²⁶⁰ It is a product of treaty practice and focuses on the provision of compensation for transboundary harm arising from lawful but risk-intensive activities.²⁶¹ Only a handful of treaties provide for international liability for transboundary environmental damage.²⁶² In 1978, the International Law Commission launched work on the topic “International liability for injurious consequences arising from acts not prohibited by international law”. Owing

International Responsibility (Oxford University Press, 2010).

²⁵⁴ See resolution 56/83, annex.

²⁵⁵ *Ibid.*, art. 2.

²⁵⁶ See *Trail Smelter Case (United States, Canada)*, pp. 1906–1982; *Corfu Channel Case, Judgment of April 9th 1949, I.C.J. Reports 1949*; Arbitral Tribunal, *Lake Lanoux Arbitration (France v. Spain)*, 16 November 1957; *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996*; Permanent Court of Arbitration, *Iron Rhine Arbitration (Belgium/Netherlands)*, Final Award, 24 May 2005.

²⁵⁷ See for example, CBD, art. 3; UNCLOS, art. 194; Vienna Ozone Convention, preamble.

²⁵⁸ See resolution 56/83, annex, arts. 30 and 31; Permanent Court of International Justice, *Chorzów Factory Case*, Ser. A, No. 13, 46–48, 1927; *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, *I.C.J. Reports 1997*; I.C.J., *Certain Activities Carried Out By Nicaragua in the Border Area (Costa Rica v. Nicaragua)*, General list No. 150 of 2 February 2018; Makane Moïse Mbengue, “Critical assessment of reparation in international environmental law”, *Proceedings of the ASIL Annual Meeting*, vol. 110 (2016), p. 293.

²⁵⁹ See Brunnée, “Of sense and sensibility”, p. 354; T. Scovazzi, “State responsibility for environmental harm”, *Yearbook of International Environmental Law*, vol. 12, No. 1 (January 2001), p. 55; Sands and others, *Principles of International Environmental Law*, p. 803.

²⁶⁰ See Teresa A. Berwick, “Responsibility and liability for environmental damage: a roadmap for international environmental law regimes”, *Georgetown International Environmental Law Review*, vol. 10, No. 2 (1998), p. 257; Brunnée, “Of sense and sensibility”, p. 352; Malgosia Fitzmaurice, “International responsibility and liability”, in Bodansky, Brunnée and Hey, eds., *The Oxford Handbook of International Environmental Law*.

²⁶¹ Berwick, “Responsibility and liability for environmental damage”, p. 259.

²⁶² See Convention on International Liability for Damage Caused by Space Objects (primary and absolute State liability); UNCLOS, art. 139, and *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion* (with respect to activities in the area); Convention on the Regulation of Antarctic Mineral Resource Activities (which has not entered into force); Madrid Protocol (which, in annex VI, article 10, imposes State liability).

to a lack of support for the concept of international liability on the part of some governments, the Commission shifted its focus to “prevention” and “allocation of loss”.²⁶³ In 2001, the Commission adopted the draft articles on the prevention of transboundary harm from hazardous activities, which purport to recognize an international obligation to take appropriate measures to prevent significant transboundary harm or to minimize it. This work was supplemented in 2006 by a set of draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities²⁶⁴ with the twin objectives of ensuring prompt and adequate compensation to victims of transboundary harm and preserving and protecting the environment through the mitigation of damage and its restoration or reinstatement. By requiring States to impose liability on those who conduct hazardous activities, the draft principles marked a clear shift from any notions of international liability.²⁶⁵

Civil liability

98. There have been remarkable developments in treaty law relating to civil liability for transboundary environmental damage. Issue-specific treaty regimes cover diverse areas such as nuclear energy,²⁶⁶ oil pollution,²⁶⁷ the transport of dangerous goods and substances, living modified organisms²⁶⁸ and industrial accidents.²⁶⁹ Earlier treaties dealing with nuclear energy and oil pollution were originally designed to ensure compensation for injury to person and property, and liability for transboundary environmental damage was subsequently added through specific amendments.²⁷⁰

99. There exist some notable deficiencies with respect to these regimes. First, the valuation of environmental damage and its reparation has proved problematic. While it is agreed that, for liability to arise, environmental damage should exceed a de minimis threshold, there is no agreed international standard for that threshold. The instruments refer variously to “significant”, “substantial” or “serious” damage or damage “above tolerable levels”.²⁷¹ Most of the civil liability regimes restrict

²⁶³ See A/CN.4/531, para. 152.

²⁶⁴ See A/61/10.

²⁶⁵ The General Assembly has continued to consider, most recently in its resolution 71/143, the possible future form of both the draft articles and draft principles.

²⁶⁶ The civil liability regime for nuclear damage comprises three interrelated treaties, with their respective amendments and supplementary instruments: Convention on Third Party Liability in the Field of Nuclear Energy (Paris Convention) and its 2004 Protocol to Amend the Paris Convention; Vienna Convention on Civil Liability for Nuclear Damage (Vienna Convention); Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material (Brussels Convention).

²⁶⁷ The oil pollution regime comprises: International Convention on Civil Liability for Oil Pollution Damage (Oil Pollution Convention), and its 1992 Protocol; International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (Oil Fund Convention); Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources.

²⁶⁸ Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety.

²⁶⁹ Protocol on Civil Liability and Compensation for Damage Caused by Transboundary Effects of Industrial Accidents on Transboundary Waters to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and to the 1992 Convention on the Transboundary Effects of Industrial Accidents.

²⁷⁰ See, for example, Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, art. 2; Convention on Supplementary Compensation for Nuclear Damage, art. 1; 2004 Protocol to Amend the Paris Convention, sect. B; Protocol to Amend the Oil Pollution Convention.

²⁷¹ ILC, on the other hand, has settled on the term “significant” in both its draft articles on prevention of transboundary harm from hazardous activities (arts. 1 and 2) and its draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous

compensation to “costs of measures of reinstatement of the impaired environment undertaken or to be undertaken”. A number of courts and tribunals have, however, awarded compensation for pure environmental damage. In many cases, environmental damage in areas beyond the limits of national jurisdiction is not covered. However, the costs of measures undertaken to prevent or mitigate environmental damage outside national jurisdiction are covered by a number of the treaties.²⁷² Finally, liability is limited in terms of the amount of compensation payable. It may also be noted that several of the civil liability instruments have not entered into force.²⁷³

VII. Conclusions

100. The above review and analysis of the state of international environmental law and environment-related instruments reveals gaps and deficiencies at multiple levels. There are significant gaps and deficiencies with respect to the applicable principles of environmental law; the normative and institutional content of the sectoral regulatory regimes, as well as their articulation with environment-related regimes; the governance structure of international environmental law; and the effective implementation of, compliance with and enforcement of international environmental law.

101. Environmental principles inform the way in which environmental treaties can be interpreted, and may fill gaps between the rules laid out in treaties. Such principles include the duty of States to prevent significant environmental harm beyond their national boundaries, exercise precaution in making decisions which may harm the environment, provide reparation for environmental harm, provide public access to information and decision-making involving potentially significant environmental harm and cooperate in environmental protection. Some of the principles have been incorporated into the issue-specific contexts of many multilateral environmental agreements. In addition, several international courts and tribunals have confirmed the existence of rules of customary international law relating to environmental protection, in particular the obligation to prevent environmental harm beyond national jurisdiction, the performance of due diligence, the duty to conduct an environmental impact assessment and the obligation of reparation for environmental damage.

102. There are important deficiencies with respect to principles of international environmental law, in particular with respect to their content and legal status. There are instances where there is no clarity as to the nature and content of a principle, or no judicial consensus as to its applicability, or no recognition in binding legal instruments, or all of the above. The degree of legal uncertainty surrounding many of these principles has a direct and indirect impact on the predictability and implementation of sectoral environmental regimes. Some principles, such as access to information, participation in decision-making and access to justice, have only

activities (principle 2).

²⁷² See, for example, International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS Convention), and Convention on Civil Liability for Damage caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessel (CRTD).

²⁷³ These include the HNS Convention and its 2010 Protocol, the Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movement of Hazardous Wastes and their Disposal, the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, the Protocol on Civil Liability and Compensation for Damage Caused by Transboundary Effects of Industrial Accidents, the Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment and the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities.

regional application. Others, such as a right to a clean and healthy environment and the principles of non-regression and progression, have only recently, and only in a limited number of legal instruments, been recognized and have not yet been fully developed. Although the principles of sustainable development and common but differentiated responsibilities and respective capabilities are inherently dynamic and flexible enough to allow international law to grow and respond to new challenges, their general application is hardly evident. There is a need to further clarify the principles of environmental law, without prejudice to the legal developments already achieved in the issue-specific contexts of various multilateral environmental agreements. A comprehensive and unifying international instrument that gathers all the principles of environmental law could provide for better harmonization, predictability and certainty.

103. International environmental law is characterized by fragmentation and a general lack of coherence and synergy among a large body of sectoral regulatory frameworks. This fragmentation is inevitable given the piecemeal, incremental and reactive nature of international environmental law-making. However, deliberate efforts will be required to harness the interlinkages and synergies inherent in specific areas such as biodiversity, atmosphere or chemicals and wastes. The governance structure of international environmental law corresponds to its fragmentation. A multiplicity of institutions have responsibilities and mandates with respect to the environment, including institutions of the United Nations system, treaty-based bodies established by multilateral environmental agreements and specialized agencies, as well as regional institutions. This institutional fragmentation requires better coordination at both the law-making and implementation levels in order to ensure policy coherence, mutual supportiveness and synergies in implementation. There is, however, an important coordination deficit within the United Nations system, between United Nations system institutions and multilateral environmental agreements, among multilateral environmental agreements and between multilateral environmental agreements and other environment-related instruments. Strengthened coordination and coherence could enhance the effectiveness of international environmental law.

104. There are important gaps and deficiencies in specific sectoral regulatory regimes. In general, the sectoral approach has also meant that some issues remain without specific, legally binding regulation, including regulations on the conservation and sustainable use of forests, the pollution of marine areas by land-based plastic waste, the protection of soil, human rights and climate change, biodiversity, nanomaterials and some geo-engineering activities. Some of these issues can, subject to political will, find a home in existing multilateral environmental agreements. With regard to the climate change regime, an important challenge is the articulation between multiple treaties that have different memberships and contain different, sometimes overlapping, obligations. There may be a need for the harmonization of various aspects of the treaties, such as reporting, in order to pre-empt potential tensions among them. In treaties that deal with the protection of the atmosphere, such as ozone and mercury regimes, challenges relate to implementation, monitoring, reporting and verification. On the other hand, air pollution has largely been framed as a regional issue, notwithstanding the growing evidence of its global effects. Regional approaches leave significant gaps in coverage in terms of countries and of pollutants or pollution sources. Some regional approaches show weak implementation and poor compliance with existing rules. A global approach to air pollution through a global air pollution treaty or the linking of regional treaties might be desirable.

105. The biodiversity cluster of treaties is also characterized by issues of ineffective implementation; ineffectual processes relating to monitoring, reporting, review and verification; and the absence of or inadequate procedures and mechanisms to promote and enforce compliance. The growing focus on the concept of ecosystem-services,

which attaches economic value to biodiversity, could help better integrate and mainstream biodiversity into other policy and law-making arenas. Several more narrowly focused regional and subregional instruments exist, but there is scope for further developments that would allow for the adjustment of rules pertaining to specific transboundary ecological areas or species. More attention needs to be given to direct and indirect drivers of biodiversity loss, as well as to cooperation and coherence with other areas of international law that govern those drivers, such as trade, food security, climate change and marine use.

106. Freshwater resources are regulated through a patchwork of global, regional and basin agreements which often utilize ambiguous terms, leading to uncertainty and a lack of uniformity as to how they are applied. Environmental principles could fill the resulting normative and institutional gaps in these instruments, and may serve to harmonize their application.

107. With regard to the marine environment, while the United Nations Convention on the Law of the Sea provides a comprehensive set of rules for the protection and preservation of the marine environment, different complementary instruments apply to various activities depending upon the subject matter and the geographical location concerned. This sectoral approach creates challenges to the implementation of integrated approaches. Compliance mechanisms are not common and disparities remain in terms of assessing implementation. No specific instruments comprehensively address the modern challenges of marine debris, plastics and microplastics. While the Convention provides a unifying legal framework to address fragmentation, its potential role in that regard has not yet been fully realized.

108. There are significant gaps in the regulatory regimes of hazardous substances, wastes and activities. With regard to hazardous substances, these gaps lie in the absence of global rules that address accident prevention, preparedness and response, as well as binding rules regarding classification, labelling, packaging and transport. International rules governing hazardous wastes do not impose quantitative restrictions on the generation of such wastes within specific time frames. The absence of an operative global liability and compensation regime with respect to the transboundary movements of hazardous wastes is a major gap in the international legal framework. Finally, in the area of hazardous activities, international regulation has focused mainly on nuclear activities. However, there are critical deficiencies with respect to legally binding global rules, principles and standards relating to the design, siting and safety of nuclear power plants.

109. The articulation between multilateral environmental agreements and environment-related instruments remains problematic owing to the lack of clarity, content-wise and status-wise, of many environmental principles. There is a need for greater mutual supportiveness of rules concerning trade and environment. Environmental concerns addressed in investment treaties have not generally evolved to include issues such as climate change and biodiversity. Intellectual property instruments have not interacted harmoniously with agricultural concerns, the rights of indigenous and local communities or access to genetic resources and benefit-sharing. Regional courts are left to integrate environmental considerations and human rights on a case-by-case basis.

110. International courts and tribunals often stress the lack of international consensus concerning environmental principles. Non-specialized courts and tribunals have faced obstacles related to assessing environmental data, situations where environmental harm has not yet occurred and applying general rules to environmental damage. Compliance regimes are largely inadequate and need to be strengthened to promote the effective implementation of multilateral environmental agreements. Outside the realm of oil pollution and nuclear damage, liability and redress regimes are either

non-existent or consist of adopted instruments that have not entered into force. Implementation gaps also remain with respect to the enforcement of rights and obligations regarding the high seas and shared natural resources.

111. The implementation of international environmental law remains problematic at both the national and international levels. National implementation is constrained in many countries by a lack of appropriate national legislation, financial resources, environmentally sound technologies and institutional capacities. National implementation could be improved through the mainstreaming of environmental considerations into other sectors and the enhanced participation of non-State actors in decision-making and implementation.

112. At the international level, implementation is also constrained by the lack of clarity of many environmental principles. Nevertheless, implementation at this level could be strengthened through more effective reporting, review and verification processes, as well as robust compliance and enforcement procedures and mechanisms. The role of non-State actors in international environmental law-making, implementation monitoring and compliance procedures needs to be enhanced in most sectoral regulatory regimes.

113. Building upon the creative approaches that States have thus far adopted to protect the environment, it is essential that States and the United Nations work together to address gaps in international environmental law. We must collectively seize the opportunity to use international environmental law in new and dynamic ways to provide a strong and effective governance regime with a view to better safeguarding the environment for future generations.
