

3

The principles of international environmental law

3.1 Introduction

In the preceding chapter, we left open the question of the principles and concepts that underlie international environmental law and define its contours. This chapter can therefore be seen as the continuation of Chapter 2, as it further develops the characterisation of international environmental law outlined there. In addition, the analysis of the principles and concepts of international environmental law is an important step in the study of its substantive aspects, which will be discussed in the second part of this book.

To understand the importance of the principles and concepts of international environmental law, as well as the difference between these two categories, it is helpful to first introduce some analytical distinctions (3.2). These distinctions will allow us to present the fundamental principles and concepts that conform the structure of international environmental law in the light of the two main values advanced by this body of law, namely prevention (3.3) and balance (3.4). The last section will link these principles and concepts to the environmental regimes examined in the second part of this book (3.5).

3.2 Some analytical distinctions

The elements that form the subject matter of this chapter have already been discussed in some detail by legal commentators, although they are often presented in different ways depending on the criteria employed by each author. To facilitate a useful comparison with these other views, distinctions that are sometimes implicit in these analyses should first be made explicit, so as to lay the ground for an introductory discussion of the material.

First, we must distinguish between the use of the term 'principle' to refer to a type of statement or formulation of a norm,¹ and its use to describe the legal

¹ See U. Beyerlin, 'Different Types of Norms in International Environmental Law', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007), Chapter 18.

foundation of a norm, whether it is a treaty, customary international law or, subsidiarily, a general principle of law.² These are two different questions because the formulation of a norm as a principle, for example in a soft-law instrument, says little about its legal grounding in one formal source of international law. The assessment of whether a given principle has a legal character is an exercise that must be performed on a case-by-case basis, as will become evident later.

Second, it is useful to classify environmental norms using three categories (concepts, principles, rules),³ according to their degree of generality/particularity. Intuitively, this distinction suggests that, as and when a norm becomes more abstract, its practical application in a given case is more prone to controversy, and vice-versa. A norm such as the obligation to prohibit the dumping of waste in the sea ('rule')⁴ clearly requires a more specific conduct than the norm prescribing the duty of States to ensure that activities under their control do not cause environmental damage ('principle').⁵ The latter is, in turn, more precise than the declaration that the seabed beyond national jurisdiction is a 'common heritage of mankind'⁶ or that the conservation of biological diversity is 'a common concern of humankind'⁷ ('concepts'). Another way to understand the distinction based on the degree of generality/particularity is to consider concepts as guiding norms that are implemented by principles, which, in turn, are realised by rules.

Third, an alternative approach in the analysis of principles and concepts is to look at the functions they perform. One important function is to provide a certain collective identity for a field of international law. In the same way as administrative law differs from labour law or criminal law by the operation of a number of principles specific to each of these branches of domestic law, the various branches of international law also have some distinctive features. One distinctive feature of international environmental law is the protection of a particular object, namely the environment. This 'identity function' may be performed by principles that are not specifically environmental (e.g. the no harm principle) as long as they have been reformulated in environmental terms. Thus, the function of the no harm principle is no longer to protect the

² G. Abi-Saab, 'Les sources du droit international: Essai de déconstruction', in *Liber Amicorum en hommage au Professeur Eduardo Jiménez de Aréchaga*, vol. I (Montevideo: Fundación de Cultura Internacional, 1994), pp. 29-49.

³ This distinction is taken from R. Dworkin, *Taking Rights Seriously* (Cambridge MA: Harvard University Press, 1977), p. 22, and employed in an environmental context by Beyerlin, *supra* n. 1.

⁴ Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 29 December 1972, as modified by the Protocol of 7 November 1996, 1046 UNTS 120, Art. 4.

⁵ The modern formulation of this norm (principle of prevention) is given in Principle 2 of the Rio Declaration. See Rio Declaration on Environment and Development, 13 June 1992, UN Doc. A/CONF.151/26.Rev.1 ('Rio Declaration').

⁶ United Nations Convention on the Law of the Sea, 10 December 1982, 1833 UNTS 397 ('UNCLOS'), Art. 136.

⁷ Convention on Biological Diversity, 5 June 1992, 1760 UNTS 79 ('CBD'), preamble, para 3.

'territory' of other States but rather the environment per se both in other States and in areas beyond the limits of national jurisdiction.⁸ Second, when seen from the perspective of the relations between international environmental law and other branches of international law, principles and concepts may also perform a 'conciliation function'. For example, the concept of sustainable development serves as a conceptual matrix to articulate the sometimes inconsistent requirements of international environmental law and international economic law.⁹ As mentioned by the ICJ in the Case concerning the Gabčíkovo-Nagymaros Project: 'This need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development'.¹⁰ Third, concepts and principles can also perform an 'architectural' function in that they can lay the foundations of an environmental regime. For example, the climate change regime has been built upon the principle of common but differentiated responsibilities. The same regime serves to illustrate a fourth function of concepts and principles, namely their interpretation function. The preambles of the Kyoto Protocol as well as certain decisions adopted by the Conference of the Parties ('COP') to the UN Framework Convention on Climate Change or by the Meeting of the Parties ('CMP') to the Kyoto Protocol refer to the principles enshrined in Article 3 of the UNFCCC as a guide to interpretation.¹¹ The 'interpretive function' also operates beyond the direct application of these environmental norms and instruments, in particular when the application of other international law norms is likely to have an impact on the environment. By way of illustration, the ICJ has held that the principle of prevention of environmental damage must be taken into account when interpreting the terms of the right to self-defence.¹² Lastly, these principles can have a 'decision-making function' or, in other words, operate as 'primary norms'. To cite just one example, the Trail Smelter Case - a leading environmental dispute - was decided on the basis of the no harm principle.¹³

Finally, a fourth distinction can be made between principles relevant to the notion of prevention in a broad sense and principles and concepts relevant to considerations of balance. By 'prevention' we refer to the need to avoid, wherever possible, environmental damage or change that would be difficult or impossible

⁸ See J. E. Viñuales, 'The Contribution of the International Court of Justice to the Development of International Environmental Law: A Contemporary Assessment' (2008) 32 *Fordham International Law Journal* 232.

⁹ See P.-M. Dupuy, 'Où en-est le droit de l'environnement à la fin du siècle?' (1997) 101 *Revue Générale de droit international public* 873.

¹⁰ *Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*, Judgment, ICJ Reports 1997, p. 7 ('Gabčíkovo-Nagymaros Project'), para. 140.

¹¹ United Nations Framework Convention on Climate Change, 9 May 1992, 31 ILM 849 ('UNFCCC'); Kyoto Protocol to the United Nations Framework Convention on Climate Change, 11 December 1997, 2303 UNTS 148 ('Kyoto Protocol').

¹² *Legality of the Threat or Use of Nuclear Weapons*, ICJ Reports 1996, p. 226 ('Legality of Nuclear Weapons'), para. 30.

¹³ *Trail Smelter Arbitration*, RIAA, vol. III, pp. 1905-82 ('Trail Smelter'), p. 1965.

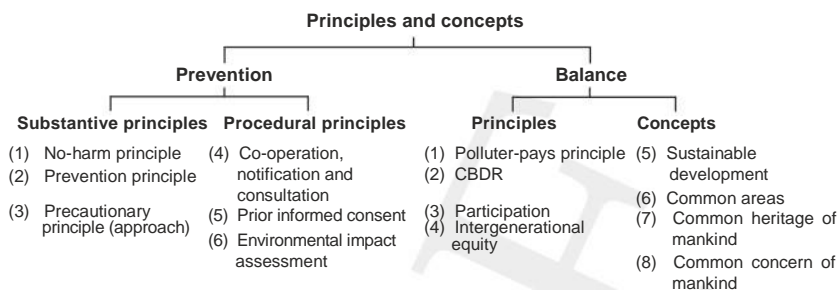


Figure 3.1: The conceptual matrix of international environmental law

to repair. This first category includes both substantive principles, such as the principles of no harm and prevention and the precautionary principle (or approach), as well as some procedural principles, such as the principles of co-operation, notification and/or consultation, the requirement to conduct an environmental impact assessment and the principle of prior informed consent. These principles are unique in that they are applicable to all States in much the same way. As such, they are not intended to introduce any formal differentiation among States or among the many sectors of human activity. In practice, the degree of development of a given State or its financial and technological position may be taken into account to some extent. Yet, the purpose of these principles is not to take such considerations (or other considerations of distributive justice) into account. The expression in international environmental law of these other considerations is channelled through a number of principles, such as the polluter-pays principle, the principle of common but differentiated responsibilities, the principle of participation and the principle of inter-generational equity, as well as concepts, such as those of sustainable development, common area, common heritage of mankind or common concern of mankind. The practical objective of these principles and concepts is to regulate access to certain resources or to distribute, among States and among different sectors of human activity, the burden of managing certain environmental problems.

The latter distinction is, in our view, the most useful one to understand the way in which the principles and concepts that will be analysed in the next paragraphs shape modern international environmental law. It relies on the analytical distinctions made above, as otherwise it would not be possible to distinguish concepts and principles or to understand their operation or legal grounding. Figure 3.1 provides an overview of the conceptual matrix of international environmental law seen from this fourth standpoint.

In what follows, our analysis will be organised around the two main ideas underlying international environmental law, namely the need to prevent environmental harm while striking a satisfactory balance among the different considerations at play.

3.3 Prevention in international environmental law

3.3.1 Introductory observations

The principles expressing the idea of prevention find their source in an older body of general international law concerning the friendly relations between neighbouring States. This older body of principles evolved over the years increasingly reflecting the emergence of transboundary and global environmental concerns. From a historical perspective, the no harm principle was the first to emerge. The adaptation of this principle to cover environmental concerns resulted in an expansion of its scope as well as in a more specific understanding of how it was to be implemented.

An expansion of its scope was necessary to go beyond the limited context of transboundary harm to the territory of another State. It was important to make clear that the environment must be protected as such and not only as part of the territory of another State. States have therefore a positive duty to prevent environmental damage *per se*. This expansion will later result in the emergence of a more comprehensive principle of prevention. An even broader expansion has been attempted, seeking to go beyond prevention to introduce a precautionary principle (or 'approach'). But, as will be discussed later, the status of this principle in general international law is still debated. Regarding the implementation dimension, it is now widely recognised in treaty and customary law that the duty to prevent environmental harm must be performed by reference to several other duties of a procedural nature, including those to co-operate, notify, consult, seek the prior informed consent of the parties concerned or conduct an environmental impact assessment. We will analyse these principles individually, in the order mentioned.

3.3.2 'No harm' principle

In order to understand the origin and content of the 'no harm' principle - and therefore its relationship with the principle of prevention - it is useful to recall its historical development. The classic formulation of the no harm principle in an environmental context appears in the Trail Smelter Case (United States v. Canada). There, the tribunal stated that

no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.¹⁴

The ICJ confirmed the customary nature of this principle in 1949, in the Corfu Channel Case (United Kingdom v. Albania), referring to the existence of 'certain general and well-recognised principles, namely . . . every State's obligation not to

¹⁴ Ibid., p. 1965.

allow knowingly its territory to be used for acts contrary to the rights of other States'.¹⁵ In both cases, this principle was used as a primary norm in order to determine the responsibility of a State for damages caused to another State.

This limited understanding of the principle lasted for several decades. In the decade following the adoption of UN General Assembly Resolution 1803 (XVII),¹⁶ the no harm principle came to be regarded as a corollary of the principle of permanent sovereignty over natural resources. The sovereign exploitation of natural resources was therefore limited by the duty not to cause damage to other States. Although this limitation was not mentioned in the text of Resolution 1803 (XVII), it was explicitly recognised in 1972, with the adoption of the Stockholm Declaration on the Human Environment. Indeed, Principle 21 of the Stockholm Declaration specifically linked the 'sovereign right' of a State to exploit its own resources to the responsibility not to cause environmental damage.¹⁷ The scope of such a duty is difficult to circumscribe in the abstract, given that certain measures or activities relating to the use of natural resources, albeit lawful, may have effects on other States. It would be too restrictive to limit such activities for that reason alone. The question becomes, therefore, at what specific point such effects can be said to be causing 'damage' and therefore violating the no harm principle. The Tribunal in the Trail Smelter Case used the term 'serious consequences'. In the context of the codification efforts by the UN International Law Commission (ILC) on the 'Law of Non-navigational Uses of International Watercourses', reference was made to the obligation not to cause 'significant harm'.¹⁸ Similarly, the ILC's 'Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities' uses the term 'significant harm'.¹⁹ More recently, in the Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), the ICJ spoke of a 'significant damage to the environment of another State'.²⁰ Principle 21 of the Stockholm Declaration does not qualify the term 'damage' with any adjective. It thus suggests that the magnitude of the effect or 'damage' must be assessed in concreto, based on criteria such as the likelihood of significant harmful effects on the environment or on the activities carried out in another State, the ratio between prevention costs and potential damage, the impact on other States'

¹⁵ Corfu Channel Case (UK v. Albania), ICJ Reports 1949, p. 4 ('Corfu Channel'), p. 22.

¹⁶ 'Permanent Sovereignty over Natural Resources', 14 December 1962, GA Res. 1803 (XVII).

¹⁷ Commission on Sustainable Development, Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development, Geneva, Switzerland, 26-28 September 1995 ('Report-Principles'), paras. 51-6.

¹⁸ See United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, 21 May 1997, 36 ILM 700 ('UN Convention on Watercourses'), Art. 7(1).

¹⁹ Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities, 12 December 2001, GA Res. 56/82, UN Doc. A/RES/56/82 ('ILC Prevention Articles'), Art. 2(a).

²⁰ Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, ICJ Reports 2010, p. 14 ('Pulp Mills'), para. 101.

capacity to use their natural wealth and resources in a similar way, the health of the population of another State, etc.²¹

It is important to underline that Principle 21 went beyond the simple idea of transboundary harm, referring also to the duty not to cause damage 'to the environment of other States or of areas beyond the limits of national jurisdiction'. This reference opened the door for a more comprehensive notion of prevention. However, this new conception only became part of positive international law in the 1990s, when the ICJ recognised, in its Advisory Opinion on the Legality of Nuclear Weapons, that Principle 21 of the Stockholm Declaration codified customary international law.²² Over the course of the 1970s and 1980s, a limited conception of the no harm principle seemed to prevail. Two examples taken from international practice illustrate this point. The first example is provided by the Nuclear Tests cases.²³ The dispute concerned the consequences of atmospheric nuclear tests conducted by France in the South Pacific. New Zealand made a request for the indication of provisional measures before the ICJ arguing that, because of the potential radioactive fallout from these tests, France violated both the rights of all members of the international community as well as the specific rights of New Zealand. In its Order, the ICJ granted interim relief to safeguard the specific rights of New Zealand only, as opposed to the rights claimed by New Zealand on behalf of the international community.²⁴ The second example is drawn from the work of the ILC on the International Liability for Injurious Consequences arising out of Acts not Prohibited by International Law. The resolution of the UN General Assembly launching the ILC work on this subject²⁵ as well as the subsequent reports presented by special rapporteurs between 1978 and 2006 clearly suggest that the focus of this work was on transboundary damage rather than on the prevention of environmental damage per se. We find traces of this narrow conception in the final texts adopted by the ILC, respectively on the 'Prevention of Transboundary Harm from Hazardous Activities'²⁶ and the 'Allocation of Loss in the Case of Transboundary Harm arising out of Hazardous Activities'.²⁷ In fact, these two instruments only refer to transboundary harm²⁸ and, despite the emphasis of the former on preventing such

²¹ Report-Principles, supra n. 17, para. 54. ²² Legality of Nuclear Weapons, supra n. 12.

²³ Nuclear Tests (New Zealand v. France), Request for the Indication of Interim Measures of Protection, Order (22 June 1973), ICJ Reports 1973, p. 135 ('Nuclear Tests - NZ - Order'); Nuclear Tests (Australia v. France), Request for the Indication of Interim Measures of Protection, Order (22 June 1973), ICJ Reports 1973, p. 99.

²⁴ Nuclear Tests - NZ - Order, supra n. 23, paras. 31-2.

²⁵ Report of the International Law Commission, UN Doc. Res. 32/151 (1977), 19 December 1977, para. 7.

²⁶ ILC Prevention Articles, supra n. 19.

²⁷ Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities, 4 December 2006, GA Res. 61/36, UN Doc. A/RES/61/36 ('ILC Principles').

²⁸ ILC Prevention Articles, supra n. 19, Art. 2(c); ILC Principles, supra n. 27, Principle 2(e).

harm, the latter deals specifically with the allocation of the burden of repairing the damage.

The examples provided in this sub-section illustrate the restrictive conception of the no harm principle that prevailed for several decades. As discussed next, the application of this principle to environmental protection led to a significant expansion of its scope, which eventually crystallised into a more comprehensive duty of prevention.

3.3.3 The principle of prevention

The current formulation of the principle of prevention in the environmental context was introduced in 1972 in Principle 21 of the Stockholm Declaration on the Human Environment:

States have . . . the sovereign right to exploit their own resources . . . and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.²⁹

As already noted, the content of Principle 21 was both a reflection of general international law (re-affirming the no harm principle) and an attempt at progressive development of this area of law (introducing the responsibility of States not to cause damage to areas outside of State jurisdiction). What Principle 21 seeks to highlight is less the protection of the interests of other States than that of the environment *per se*. Once this caveat has been made explicit, it is easier to understand the difference between no harm and actual prevention. The focus of this new perspective is not on the determination of liability for damage already caused to another State but rather on the obligation to prevent damage to the environment in general. The underlying conception was that prevention was particularly important in the context of environmental protection because environmental damage was often irreversible. This concern for the environment had already started to come into sharp focus in the late 1960s, after disasters such as the sinking of the Liberian oil tanker Torrey Canyon near the British coast. But it was nevertheless a new perspective, which required the rethinking - in general - of the relationship between States and different areas of the planet. Such a new perspective needed to be tamed on a case-by-case basis before being admitted into general international law.

It is therefore not surprising that the principle of prevention first featured in soft-law instruments and treaties, before being recognised as a customary principle. It may be useful, in this regard, to refer to a number of international instruments that have provided legal grounding to the principle of prevention.

²⁹ On this principle, see L.-A. Duvic Paoli and J. E. Viñuales, 'Principle 2: Prevention', in Viñuales, J. E. (ed.), *The Rio Declaration on Environment and Development. A Commentary* (Oxford University Press, 2015), pp. 107-38.

For example, Article 193 of the United Nations Convention on the Law of the Sea ('UNCLOS')³⁰ provides that 'States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment'. This provision is preceded by a general obligation, under Article 192, to 'protect and preserve the marine environment', and followed by a more specific statement (Article 194(2)), which recalls the formulation of Principle 21 of the Stockholm Declaration. It is noteworthy that the 'marine environment' is not limited to the territory of States or to areas under their control³¹ but also includes common areas. Accordingly, measures must be taken to prevent, reduce or control the pollution of the marine environment arising from activities conducted in the 'Area', namely the seabed under the high seas beyond the limits of national jurisdiction.³² Similarly, the exploitation of the living resources of the high seas must be in accordance with the requirements of conservation and management set out in Articles 116-20 of UNCLOS. Also, the preamble to the United Nations Framework Convention on Climate Change ('UNFCCC')³³ and Article 3 of the Convention on Biological Diversity ('CBD')³⁴ refer to the prevention principle in its expanded version introduced in the Stockholm Declaration and subsequently taken up by Principle 2 of the Rio Declaration on Environment and Development.

It is in this broad formulation that the prevention principle features in the decisions of international tribunals. As already noted, the transition from a treaty-based principle to a customary one became clear in 1996 when the ICJ, in its Advisory Opinion on the Legality of Nuclear Weapons, held that the prevention principle as enshrined in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration was part of general international law:

[t]he existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.³⁵

The ICJ has subsequently confirmed twice the customary nature of the prevention principle. In the *Gabčíkovo-Nagymaros Project* case, the ICJ stated that:

in the field of environmental protection, vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage.³⁶

³⁰ UNCLOS, *supra* n. 6.

³¹ Such as the exclusive economic zone (Part V, UNCLOS) or the continental shelf (Part VI, UNCLOS).

³² *Ibid.*, Art. 145(a). See *infra* n. 40. ³³ UNFCCC, *supra* n. 11, preamble, para. 8.

³⁴ CBD, *supra* n. 7, Art. 3. ³⁵ *Legality of Nuclear Weapons*, *supra* n. 12, para. 29.

³⁶ *Gabčíkovo-Nagymaros Project*, *supra* n. 10, para. 140.

More recently, in the Pulp Mills case, the ICJ further confirmed this principle and spelled out its origins in the no harm principle.³⁷ In the latter case, the Court also clarified the contours of the obligation of 'due diligence' that flows, for each State, from the prevention principle. Although the Court's analysis relates to the provisions of the Statute of the River Uruguay, its reasoning suggests that the prevention principle requires (i) an obligation of conduct and, more particularly, of co-operation for the implementation and application of appropriate measures for the preservation of the environment,³⁸ as well as (ii) the obligation to conduct an environmental impact assessment where the proposed activity is likely to have a significant adverse impact in a transboundary context, especially with respect to a shared resource.³⁹ This understanding has been taken up in the advisory opinion the Seabed Chamber of the International Tribunal on the Law of the Sea ('ITLOS') on the Responsibilities and Obligations of States sponsoring Persons and Entities with respect to Activities in the Area.⁴⁰ The Seabed Chamber specifically refers to paragraph 187 of the Pulp Mills decision in order to characterise the obligation 'to ensure' arising from Article 139(1) of UNCLOS as an obligation 'of conduct' or 'due diligence'.⁴¹ This obligation is subsequently assimilated to the one arising from Article 194(2) of UNCLOS⁴² and, more importantly for present purposes, the meaning of 'due diligence' is further specified. Thus, according to the Seabed Chamber, the 'due diligence' obligation encompasses: (i) the obligation of States to adopt appropriate measures and ensure that they are reasonably enforced;⁴³ (ii) the obligation (based both on the UNCLOS and on customary international law) to conduct an environmental impact assessment;⁴⁴ and (iii) the obligation to apply the precautionary approach not only as a requirement of the applicable regulations of the Seabed Authority but also as a component of the 'due diligence' obligation and, possibly, of customary international law.⁴⁵

As discussed next, the Advisory Opinion on the Area signals a trend towards the extension of the idea of prevention, at least in treaty law, to cover situations where the impact of an activity on the environment is only hypothetical.

³⁷ Pulp Mills, *supra* n. 20, paras. 101 and 185. ³⁸ *Ibid.*, paras. 102, 181-9. ³⁹ *Ibid.*, para. 204.

⁴⁰ Responsibilities and Obligations of States sponsoring Persons and Entities with respect to Activities in the Area, Case No. 17, ITLOS (Seabed Dispute Chamber), Advisory Opinion (1 February 2011) ('Responsibilities in the Area').

⁴¹ *Ibid.*, para. 110-11. ⁴² *Ibid.*, para. 113.

⁴³ *Ibid.*, paras. 115 (referring to the interpretation of the obligation of 'due diligence' provided by the ICJ in the Pulp Mills case), 116 (referring to the ILC Project on Prevention) and 117-20 (referring, in para. 120, to the more detailed answer given by the Chamber in response to the third question put to it).

⁴⁴ *Ibid.*, para. 145. ⁴⁵ *Ibid.*, paras. 125-35, particularly paras. 131 and 135.

3.3.4 Precaution in international law

Precaution as a legal term has its origins in the 'Vorsorgeprinzip' introduced by the legislation of the Federal Republic of Germany.⁴⁶ The underlying idea is that the lack of scientific certainty about the actual or potential effects of an activity must not prevent States from taking appropriate measures.⁴⁷ Beyond this elementary content, the legal implications of precaution are, however, difficult to circumscribe precisely.

Despite numerous attempts at clarifying these implications, the (i) nature, (ii) normative basis and (iii) content of precaution in international law are still debated. This is probably due to the diversity of angles from which precaution can be viewed. While some see precaution as a 'principle',⁴⁸ others, including the ICJ, consider precaution as a mere 'approach'.⁴⁹ In both cases, the normative basis of precaution is unsettled. Aside from a treaty-based duty of precaution, some commentators argue for the recognition of a precautionary principle based on customary international law⁵⁰ or as a general principle of law within the meaning of Article 38(1)(c) of the Statute of the ICJ.⁵¹ Others, including the Dispute Settlement Body of the WTO,⁵² refuse to give it any basis in general international law. The difficulties raised by precaution do not stop there. Even if the existence of a customary precautionary principle could be admitted, its content would still have to be defined.⁵³ Is it an obligation to take action despite the lack of sufficient evidence about the danger that an activity poses to the environment? Or is it, rather, a simple authorisation to take such measures? Or, still, is it a procedural rule shifting the burden of proof (or lowering the standard of proof to facilitate such a shift) when certain activities are potentially harmful to the environment? All of these questions make the task of anchoring the legal concept of precaution in international law difficult. To identify some of the key elements of the debate, it may be useful to review

⁴⁶ See K. von Moltke, 'The Vorsorgeprinzip in West German Environmental Policy', in Royal Commission on Environmental Pollution, Twelfth Report: Best Practicable Environmental Option, 1988, p. 57.

⁴⁷ On this principle, see A. A. Cançado Trindade, 'Principle 15: Precaution', in Viñuales, *supra* n. 29, pp. 403-28.

⁴⁸ Report-Principles, *supra* n. 17, paras. 70-4. ⁴⁹ Pulp Mills, *supra* n. 20, para. 164.

⁵⁰ Public hearing held on Wednesday 16 September 2009, at 10 am, at the Peace Palace, Mr Tomka presiding, Vice-president, Acting-president in the Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay), Pleadings of Mr Sands, p. 58.

⁵¹ See CFI, 26 November 2002, Case T-74/00, Artegoda GmbH and others v. Commission ECR II-4945, para. 184 (speaking of a 'general principle of Community Law'); Pulp Mills, *supra* n. 20, Separate opinion of A. A. Cançado Trindade, paras. 67-8.

⁵² European Communities - Measures Concerning Meat and Meat Products (Hormones), AB Report (16 January 1998) WT/DS26/AB/R, WT/DS48/AB/R, ('EC - Hormones'), paras. 123-5; European Communities - Measures Affecting the Approval and Marketing of Biotech Products, Panel Report (29 September 2006), WT/DS291/R, WT/DS292/R, WT/DS293/R ('EC - Biotech Products'), paras. 7.88-7.89.

⁵³ Report-Principles, *supra* n. 17, paras. 71-2; D. Bodansky, 'Deconstructing the Precautionary Principle', in D. Caron and H. N. Scheiber (eds.), *Bringing New Law to Ocean Waters* (Leiden: Martinus Nijhoff, 2004), pp. 381-91.

the concept of precaution as it features in treaties, soft-law instruments and decisions of judicial or quasi-judicial bodies.

Regarding, first, treaty law, there are more and more treaties incorporating references to precaution in its various forms.⁵⁴ The first treaty regime that explicitly referred to the concept of precaution is the one established by the Vienna Convention for the Protection of the Ozone Layer of 1985,⁵⁵ and further developed by its Montreal Protocol of 1987.⁵⁶ From 1990 onwards, the number of treaties referring to precaution has increased. Such references may indeed be found not only in the preamble of the CBD,⁵⁷ but also in the body of the UNFCCC, in particular Article 3.3, which provides that

[t]he Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures.

More recently, the concept of precaution has been incorporated in the text of many other multilateral environmental agreements ('MEAs'), such as the 1995 Agreement on Straddling Fish Stocks ('precautionary approach'),⁵⁸ the 2000 Biosafety Protocol to the CBD ('precautionary approach'),⁵⁹ or the 2001 Stockholm Convention on Persistent Organic Pollutants ('precaution concern/precautionary approach').⁶⁰ Moreover, the concept of precaution has also featured, to varying degrees, in regional environmental treaties⁶¹ and even in treaties governing other matters.⁶²

⁵⁴ See, generally, A. Trouwborst, *Evolution and Status of the Precautionary Principle in International Law* (The Hague: Kluwer, 2002).

⁵⁵ Vienna Convention for the Protection of the Ozone Layer, 22 March 1985, 1513 UNTS 293 ('CPOL'), preamble, para. 5.

⁵⁶ Montreal Protocol on Substances that Deplete the Ozone Layer, 16 September 1987, 1522 UNTS 29 ('Montreal Protocol'), preamble, para. 6.

⁵⁷ CBD, *supra* n. 7, preamble, para. 9.

⁵⁸ Agreement for the Implementation of the Provisions of the United Nations Conventions 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, 4 August 1995, 2167 UNTS 88 ('Straddling Fish Stocks Agreement'), Art. 6.

⁵⁹ Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 29 January 2000, 39 ILM 1027 (2000) ('Biosafety Protocol'), Arts. 1 and 10(6).

⁶⁰ Stockholm Convention on Persistent Organic Pollutants, 22 May 2001, 40 ILM 532 (2001) ('POPs Convention'), preamble, para. 8 and Art. 1.

⁶¹ See e.g. Bamako Convention on the ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, 30 January 1991, 30 ILM 773 ('Bamako Convention'), Art. 4(3); Convention for the Protection of the Marine Environment of the North East Atlantic, 22 September 1992, 2354 UNTS 67 ('OSPAR Convention'), Annex II, Art. 3(3)(c); Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 18 March 1992, 1936 UNTS 269 ('Helsinki Convention'), Art. 2; Convention on Co-operation for the Protection and Sustainable Use of the River Danube, 29 June 1994, IER 35:0251 ('Danube Convention'), Art. 2(4).

⁶² Treaty on the Functioning of the European Union, as amended by the Lisbon Treaty, 13 December 2007, OJ C 83, 30 March 2010 ('TFEU'), Art. 191(2); Agreement on the

Second, as regards the concept of precaution in soft-law instruments, the adoption by the UN General Assembly of the World Charter for Nature in 1982 referred already to precaution in one of its variants: 'where potential adverse effects are not fully understood, the activities should not proceed'.⁶³ Ten years later, this concept was enshrined in Principle 15 of the Rio Declaration on Environment and Development in the following terms:

[i]n order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

This is the most accepted formulation in general discussions about the concept of precaution in international law. However, it raises some difficult issues, such as the determination of the concepts of 'serious or irreversible damage', 'scientific uncertainty' or the distinction between the 'duties' of States 'according to their capabilities'. Faced with such uncertainty, one would have expected that international courts and tribunals clarify the contours of the concept of precaution. Yet, the case law on this question remains divided.

Indeed a survey of the many decisions relevant to this question does not offer a clearer picture. While the Dispute Settlement Body of the WTO ('DSB') seems reluctant to admit the existence of a precautionary principle in general international law,⁶⁴ other international courts such as the European Court of Human Rights ('ECtHR') or the International Tribunal for the Law of the Sea ('ITLOS') have given a more favourable reception to the principle. The position of the ICJ is somewhat between these two extremes. In the Pulp Mills case, Argentina argued that customary international law recognised the existence of a precautionary principle the effect of which was to shift the burden of proof to Uruguay. However, the ICJ did not follow Argentina's position, and it only observed 'that while a precautionary approach may be relevant in the interpretation and application of the provisions of the Statute, it does not follow that it operates as a reversal of the burden of proof'.⁶⁵ This view can be contrasted with that of the ECtHR in its recent jurisprudence. Reversing a long-standing reluctance to accept the precautionary principle, the ECtHR now recognises:

the importance of the precautionary principle (enshrined for the first time in the Rio Declaration), which 'was intended to apply in order to ensure a level of high

Application of Sanitary and Phytosanitary Measures, 15 April 1994, 1867 UNTS 493 ('SPS Agreement'), Art. 5(7).

⁶³ World Charter for Nature, GA Res. 37/7, 28 October 1982, para. 11(b).

⁶⁴ In EC - Biotech, the panel noted that 'there has, to date, been no authoritative decision by an international court or tribunal which recognizes the precautionary principle as a principle of general or customary international law', EC - Biotech, supra n. 52, para. 7.88. In taking this view, the panel followed the Appellate Body in EC - Hormones, supra n. 52, para. 124.

⁶⁵ Pulp Mills, supra n. 20, para. 164.

protection of health, the safety of consumers and the environment in all Community activities'.⁶⁶

Similarly, the ITLOS noted on two occasions that States must 'act with prudence and caution'⁶⁷ or that 'prudence and caution' require States to cooperate to protect the environment,⁶⁸ and it has more recently embraced the precautionary approach in its Advisory Opinion on the Area:

[t]he Chamber observes that the precautionary approach has been incorporated into a growing number of international treaties and other instruments, many of which reflect the formulation of Principle 15 of the Rio Declaration. In the view of the Chamber, this has initiated a trend towards making this approach part of customary international law.⁶⁹

At the European Union level, the Court of First Instance ('CFI') and the European Court of Justice ('ECJ') have clearly recognised the normative basis of the precautionary principle as a general principle of European law.⁷⁰

These differences in the recognition of the concept of precaution can be explained, among other factors, by the explicit mention of the precautionary principle in the Treaty on the Functioning of the European Union⁷¹ and, beyond the EU framework, by the nature of the cases that different courts are likely to handle. Indeed, both the ECtHR and the ITLOS are, by their very mandate, likely to hear cases where compliance with certain environmental norms is a major issue, either in connection with the application of human right provisions with environmental content or of the UNCLOS provisions protecting the marine environment. By contrast, in international economic law, environmental protection is still perceived as a limitation to free trade and investment. This divide makes the position of the ICJ all the more important, as the guardian of general international law.

3.3.5 Co-operation, notification, consultation

The existence of a general duty of co-operation is well established in international law. This duty is formulated, *inter alia*, in Principle 4 of General Assembly Resolution 2625 (XXV) on the 'Principles of

⁶⁶ *Tatar v. Romania*, ECtHR Application No. 67021/01, Judgment (27 January 2009, Final 6 July 2009) ('*Tatar v. Romania*'), para. 120.

⁶⁷ *Southern Bluefin Tuna Cases* (*New Zealand v. Japan*; *Australia v. Japan*), Provisional Measures, ITLOS Case Nos. 3 and 4, Order (27 August 1999) ('*Southern Bluefin Tuna*'), para. 77 (the French text speaks of 'prudence et précaution').

⁶⁸ *MOX Plant Case* (*Ireland v. United Kingdom*), ITLOS Case No. 10, Order (3 December 2001) ('*MOX Plant*'), para. 84 (the French text speaks of 'prudence et précaution').

⁶⁹ *Responsibilities in the Area*, *supra* n. 40, para. 135.

⁷⁰ See *Pfizer Animal Health SA v. Council*, CFI Case T-13/99, Judgment (11 September 2002), paras. 114-15. See also *Gowan Comércio Internacional e Serviços Lda v. Ministero della Salute*, CJEU Case C-77/09, Judgment (22 December 2010), para. 75.

⁷¹ See TFEU, *supra* n. 62, Art. 191 (formerly EC Treaty, Art. 174).

International Law Concerning Friendly Relations and Cooperation among States'.⁷²

In the context of environmental law, however, the duty of co-operation has taken many different forms.⁷³ The Group of Experts convened by the CSD in 1995 to identify the principles of international environmental law distinguished between a duty to co-operate 'in a spirit of global partnership'⁷⁴ and a duty to co-operate in 'a transboundary context'.⁷⁵ The first encompasses the relations among States with respect to the 'global commons', and it has crystallised into 'principles' and 'concepts' such as the 'common concern of humankind',⁷⁶ the 'common heritage of mankind',⁷⁷ the 'common but differentiated responsibilities' of States⁷⁸ or, more generally, the 'differential treatment' that may be accorded to States on the basis of their particular situation.⁷⁹ The second duty covers, according to this report, some minimal requirements of co-operation in a transboundary context through norms such as the principle of reasonable and equitable use of shared resources,⁸⁰ the duty of notification and consultation with States potentially affected by an activity/event having consequences on the environment,⁸¹ the obligation to conduct an environmental impact assessment,⁸² the principle of prior informed consent,⁸³ or the duty to avoid the relocation of activities harmful to the environment.⁸⁴

⁷² 'Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations', Res. 2625 (XXV), 26 October 1970.

⁷³ See L. Boisson de Chazournes and K. Sangbana, 'Principle 19: Notification and consultation on activities with transboundary impact', in Viñuales, *supra* n. 29, pp. 492-507; P. Okowa, 'Principle 18: Notification and Assistance in Case of Emergency', in Viñuales, *supra* n. 29, pp. 471-92; P. H. Sand, 'Principle 27: Cooperation in a Spirit of Global Partnership', in Viñuales, *supra* n. 29, pp. 617-32.

⁷⁴ Rio Declaration, *supra* n. 5, Principle 7. ⁷⁵ Report-Principles, *supra* n. 17, paras. 75-122.

⁷⁶ UNFCCC, *supra* n. 11, preamble, para. 1; CBD, *supra* n. 7, preamble, para. 3.

⁷⁷ UNCLOS, *supra* n. 6, Art. 136. ⁷⁸ UNFCCC, *supra* n. 11, Art. 3.1.

⁷⁹ *Ibid.*, Arts. 3(2), 4(4)-(6) and 4(9); UNCLOS, *supra* n. 6, preamble and Art. 207.4; United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 17 June 1994, 33 ILM 1328 ('UNCCD'), preamble and Arts. 5-6.

⁸⁰ Helsinki Rules on the Uses of the Waters of International Rivers, adopted by the International Law Association at its 52nd Conference, Helsinki, 20 August 1966, Art IV; 'Charter of Economic Rights and Duties of States', Res. 3281 (XXIX), 12 December 1974, Art. 3; UN Convention on Watercourses, *supra* n. 18, Art. 5.

⁸¹ Convention on Long-Range Transboundary Air Pollution, 13 November 1979, 1302 UNTS 217 ('LRTAP Convention'), Art. 5; UNCLOS, *supra* n. 6, Arts. 198 and 206; Convention on the Transboundary Effects of Industrial Accidents, 17 March 1992, 2105 UNTS 457, Arts. 10 and 17; Convention on Early Notification of a Nuclear Accident, 26 September 1986, 1439 UNTS 275; Rio Declaration, *supra* n. 5, Principles 18 and 19.

⁸² See Convention on Environmental Impact Assessment in a Transboundary Context, 25 February 1991, 1989 UNTS 310 ('Espoo Convention').

⁸³ Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 10 September 1998, 2244 UNTS 337 ('Rotterdam Convention' or 'PIC Convention').

⁸⁴ Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 22 March 1989, 1673 UNTS 57 ('Basel Convention'), Arts. 4(5)-(6); Bamako Convention, *supra* n. 61, Art. 4; Rio Declaration, *supra* n. 5, Principle 14.

Thus characterised, the duty of co-operation on environmental matters would seem to be of a substantive (rather than a procedural) nature, in that it would encompass foundational 'principles' and 'concepts'. In fact, the conceptualisation offered by the Expert Group of the CSD is best understood as an attempt to contribute to the progressive development of international environmental law. As such, it may not accurately reflect the nature and content of the duty of co-operation in general international law. Co-operation remains an obligation of conduct whose specific manifestation depends upon what could be expected from a State acting in good faith.⁸⁵ Due to the relatively vague nature of such a duty, there are several ways in which it can be spelled out.

As a general rule, States are encouraged to seek, if necessary, the assistance of an international organisation or to conclude a treaty specifically regulating the procedure by which co-operation will take place.⁸⁶ And where such arrangements leave room for different interpretations, the duty to co-operate in good faith can be used to specify the content of a treaty obligation. An important consequence is that, in practice:

as long as the procedural mechanism for co-operation between the parties to prevent significant damage to one of them is taking its course, the State initiating the planned activity is obliged not to authorize such work and, a fortiori, not to carry it out.⁸⁷

In some cases, the content of the duty can be defined by an international tribunal. In the environmental context, the duty of co-operation has been construed as requiring the exchange information,⁸⁸ the joint evaluation of the environmental impacts of certain activities⁸⁹ or, more recently, the consultation of the secretariat of an environmental treaty of particular relevance to the case.⁹⁰

3.3.6 Prior informed consent

The requirement of prior informed consent ('PIC') has two meanings in international law. First, it refers to a duty to consult indigenous peoples who

⁸⁵ North Sea Continental Shelf Case, Judgment, ICJ Reports 1969, p. 3 ('North Sea Continental Shelf'), para. 85; Pulp Mills, supra n. 20, paras. 145-6.

⁸⁶ UN Convention on Watercourses supra n. 18, Art. 8; ILC Prevention Articles, supra n. 19, Art. 4; Lake Lanoux Arbitration (Spain v. France), Award (16 November 1957), RIAA XII, p. 281 ('Lake Lanoux Arbitration'), pp. 22-3; North Sea Continental Shelf, supra n. 85, para. 85; Southern Bluefin Tuna, supra n. 67, para. 90(e).

⁸⁷ Pulp Mills, supra n. 20, para. 144. ⁸⁸ MOX Plant, supra n. 68, para. 89(a).

⁸⁹ See Fisheries Jurisdiction Case (UK v. Iceland), Decision on Jurisdiction, ICJ Reports 1974, p. 3 ('Fisheries Jurisdiction'), para. 72; Pulp Mills, supra n. 20, para. 281; MOX Plant, supra n. 68, para. 89(b).

⁹⁰ Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua), Provisional Measures, Order of 8 March 2011, ICJ Reports 2011, p. 6 ('Costa Rica v. Nicaragua'), paras. 80 and 86(2).

may be affected by the adoption of a measure. This meaning of the PIC requirement would be more appropriately discussed in the context of 'balance', as it seeks to preserve the interests of certain groups. It is recalled here to avoid treating the PIC requirement in two separate sections. The Convention No. 169 of the International Labour Organisation on Indigenous and Tribal Peoples provides for an obligation to consult with and seek the prior informed consent of indigenous peoples as a condition for their exceptional 'displacement' or 'relocation' by the government of a State.⁹¹ Similarly, Resolution 61/295 of the UN General Assembly, entitled 'United Nations Declaration on the Rights of Indigenous Peoples', provides in its Article 10 that '[i]ndigenous peoples shall not be forcibly removed from their lands' and that '[n]o relocation shall take place without the free, prior and informed consent of the indigenous peoples concerned'.⁹² A variation of this first meaning appears in the biodiversity regime. Article 8(j) of the CBD requires the 'approval and involvement' of indigenous peoples as a condition for the utilisation of their traditional knowledge.⁹³ This requirement has been further specified in the Protocol on Access and Benefit Sharing adopted at Nagoya, in October 2010.⁹⁴

Second, the PIC requirement also refers to the obligation assumed by a State not to export certain wastes, substances or products to another State unless the latter has given its prior informed consent.⁹⁵ The objective of this requirement is to ensure that such wastes, substances or products are sent only to States who are willing to accept them and have the technical capacity to manage them. In general, there are two ways to implement the requirement of prior informed consent, namely (i) a general PIC procedure (by substance) and (ii) a specific PIC procedure (by shipment). The first approach can be illustrated by reference to the 1998 Rotterdam Convention on the Prior Informed Consent Procedure, also known as the 'PIC Convention'.⁹⁶ In force since 2006, the Convention has established a system of product identification⁹⁷ and information exchange.⁹⁸ For each product subject to the PIC procedure (listed in Annex III), a 'decision

⁹¹ Convention (No. 169) concerning Indigenous and Tribal Peoples in Independent Countries, 27 June 1989, 28 ILM 1382 (1989) ('ILO Convention 169'), Arts. 16(2) and 6.

⁹² See 'United Nations Declaration on the Rights of Indigenous Peoples', 2 October 2007, UN Doc. A/RES/61/295 ('UNDRIP'), Annex, Arts. 10 and 19.

⁹³ CBD, *supra* n. 7, Art. 8(j).

⁹⁴ Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of the Benefits arising from their Utilization to the Convention on Biological Diversity, 29 October 2010, available at: www.cbd.int (visited on 4 January 2013), Arts. 6(2) and 7.

⁹⁵ See M. Mbengue, 'Principle 14: Dangerous Substances and Activities', in Viñuales, *supra* n. 29, pp. 383-402.

⁹⁶ PIC Convention, *supra* n. 83. The origins of this international instrument can be found in two soft law instruments managed respectively by the FAO and UNEP, namely the 'Code of Conduct on the Distribution and Use of Pesticides' (adopted in 1985 and subsequently revised) and the 'London Guidelines for the Exchange of Information on Chemicals that are the Subject of International Trade' (adopted in 1987 and subsequently revised).

⁹⁷ PIC Convention, *supra* n. 83, Arts. 5, 6 and 8. ⁹⁸ *Ibid.*, Art. 14.

guidance document' is produced and communicated to the States parties⁹⁹ so that each of them can make a decision on the admissibility of such product into its territory.¹⁰⁰ Information about which State accepts the import of a given product is then circulated by the secretariat to the other States parties.¹⁰¹ Exporting States must take measures to ensure that exporters based in their territories comply with the decision of importing countries.¹⁰²

The foregoing approach may be contrasted with the specific PIC procedure laid out, for example, in Article 6 of the Basel Convention on Hazardous Wastes (Basel Convention).¹⁰³ This provision establishes a system whereby the competent authority of the exporting State must notify (respecting certain requirements) its counterpart in the importing State (and any transit States) of any planned shipment of hazardous wastes or other waste, or require private operators do so.¹⁰⁴ Subsequently, the export State may authorise the transboundary movement of wastes if it has received the written consent of the importing State.¹⁰⁵ Article 6(6)-(8) also provides for a facilitated version of this specific PIC procedure, comparable to a general PIC procedure. Under this facilitated procedure waste with similar physical and chemical characteristics may be shipped regularly under the same authorisation over a maximum period of twelve months.¹⁰⁶ Despite these similarities with the general PIC procedure, the procedure of Article 6(6)-(8) remains, however, a specific PIC procedure, as it applies to a particular exporter and is shipment-based.

Regarding the status in general international law of the PIC requirement, in either its general or specific versions, it seems premature to consider it as an international custom. One may observe, however, that the procedural nature of this requirement is not in itself an obstacle to its recognition in general international law, as suggested by the position taken by the ICJ in relation to the legal status of another procedural principle, namely the obligation to conduct an environmental impact assessment.

3.3.7 Environmental impact assessment

The origins of the obligation to conduct an environmental impact assessment ('EIA') can be traced back to the domestic law of some States and, particularly, to the National Environmental Policy Act adopted by the United States as early as 1969.¹⁰⁷ Subsequently, this obligation was introduced into the domestic legislation of many other States¹⁰⁸ as well as into a number of treaties with

⁹⁹ *Ibid.*, Art. 7. ¹⁰⁰ *Ibid.*, Art. 10. ¹⁰¹ *Ibid.*, Art. 10(10). ¹⁰² *Ibid.*, Art. 11.

¹⁰³ Basel Convention, *supra* n. 84. ¹⁰⁴ *Ibid.*, Art. 6(1). ¹⁰⁵ *Ibid.*, Art. 6(2)-(3).

¹⁰⁶ *Ibid.*, Art. 6(6)-(8). ¹⁰⁷ National Environmental Policy Act, 42 USC ch. 55.

¹⁰⁸ See N. A. Robinson, 'EIA Abroad: The Comparative and Transnational Experience', in S. G. Hildebrand and J. B. Cannon (eds.), *Environmental Analysis: The NEPA Experience* (Boca Raton: Lewis, 1993), pp. 679-702; N. Craik, *The International Law of Environmental Impact Assessment* (Cambridge University Press, 2008); N. Craik, 'Principle 17: Environmental Impact Assessment', in Viñuales, *supra* n. 29, pp. 451-70.

regional¹⁰⁹ and universal scope.¹¹⁰ It was also incorporated into Principle 17 of the Rio Declaration, which provides that:

[e]nvironmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

To understand the scope of the obligation to conduct an EIA, three issues must be addressed, namely (i) the formal source from which the obligation derives (treaty, custom, general principles of law), (ii) the spatial scope of the requirement (national, transboundary, global) and (iii) the specific content of the obligation.

Regarding the first point, some treaties provide for an obligation to conduct an EIA. One major example is the Convention on Environmental Impact Assessment in a Transboundary Context ('Espoo Convention') adopted in 1991 as part of the United Nations Economic Commission for Europe ('UNECE').¹¹¹ Under this Convention, States parties must introduce into their domestic law the obligation to conduct an EIA before authorising certain activities (listed in Appendix I) that may have a 'significant adverse transboundary impact'.¹¹² Beyond treaty law, the ICJ has recently recognised, in the Pulp Mills case, that the obligation to conduct an EIA has a customary grounding. According to the Court, a practice has developed:

which in recent years has gained so much acceptance among States that it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource.¹¹³

The statement of the Court takes us directly to the second point identified above, namely the spatial scope of the requirement. Both the Espoo Convention (as well as other conventions) and general international law seem to confine the obligation to conduct an EIA to the transboundary context. This leaves open the question of whether the customary obligation also covers situations where the proposed activity takes place in a purely domestic context or where it concerns areas beyond national jurisdiction.

¹⁰⁹ According to Kiss and Beurier, the first international conventions to provide for this requirement was the Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution, 24 April 1978, Art. 11(a), and the Apia Convention on the Conservation of Nature in the South Pacific, 12 June 1976, Art. 5(4). They were followed by the Kuala Lumpur (ASEAN) Cooperation Plan on Transboundary Haze Pollution, 9 July 1985, Art. 14. See A. Kiss and J.-P. Beurier, *Droit international de l'environnement* (Paris: Pedone, 2004), para. 324.

¹¹⁰ See UNCLOS, *supra* n. 6, Art. 206; Protocol on Environmental Protection to the Antarctic Treaty, 4 October 1991, 30 ILM 1455 (1991) ('Madrid Protocol'), Art. 8 and Annex I; UN Convention on Watercourses, *supra* n. 18, Art. 12.

¹¹¹ Espoo Convention, *supra* n. 82. ¹¹² *Ibid.*, Art. 2(3). ¹¹³ Pulp Mills, *supra* n. 20, para. 204.

These questions have not been settled in the case-law yet. It should be noted, however, that the formulation of Principle 17 of the Rio Declaration (which refers to the EIA as a national instrument) or Article 206 of UNCLOS (which aims to prevent 'substantial pollution of or significant and harmful changes to the marine environment' in general) favour the broadening of the spatial scope of the customary obligation to conduct an EIA. Moreover, the ITLOS Seabed Chamber has noted, in its recent Advisory Opinion on the Area, that the obligation to conduct an EIA also applied beyond a transboundary context:

[t]he [ICJ]'s reasoning in a transboundary context may also apply to activities with an impact on the environment in an area beyond the limits of national jurisdiction; and the Court's references to 'shared resources' may also apply to resources that are the common heritage of mankind.¹¹⁴

As to the specific content of the EIA, it depends upon the source of the obligation. Whereas, in general, the content of the EIA obligation deriving from a treaty source may be identified quite precisely,¹¹⁵ the content of the customary rule is set, according to the ICJ, by the domestic law of States.¹¹⁶ An important question that arises is whether the EIA must necessarily involve consultation with potentially affected populations. In the framework of the Espoo Convention, the question is answered affirmatively in Articles 2(6) and 3(8), and also features as a criterion to determine the significance of the environmental impact of an activity.¹¹⁷ The Operational Policy on the environment followed by the International Finance Corporation ('IFC') in its project finance activities (IFC OP 4.01) expressly provides for an obligation to consult.¹¹⁸ Outside the treaty and administrative framework, the question is less clear. The ILC Prevention Articles state, in Article 13, an obligation to provide 'information to the public'.¹¹⁹ The question arose in the Pulp Mills case but the Court merely concluded that no legal duty to consult the affected populations existed for Uruguay on the basis of the 'instruments invoked by Argentina'¹²⁰ and that, in any event, a consultation had taken place.¹²¹ This conclusion does not settle the question because the Court avoided the question as to whether an obligation to consult (even with a minimum content) exists in general international law.

¹¹⁴ Responsibilities in the Area, supra n. 40, para. 148.

¹¹⁵ See, e.g., Appendices II and III of the Espoo Convention, supra n. 82.

¹¹⁶ In the Pulp Mills case, the Court held that: 'it is for each State to determine in its domestic legislation or in the authorization process for the project, the specific content of the environmental impact assessment required in each case', supra n. 20, para. 205.

¹¹⁷ Espoo Convention, supra n. 82, Arts. 2(6), 3(8), and Appendix III, para. 1(b) in fine.

¹¹⁸ International Finance Corporation, Operational Policy 4.01 - Environmental Assessment, October 1998, paras. 12 and 13.

¹¹⁹ ILC Prevention Articles, supra n. 19, Art. 13. ¹²⁰ Pulp Mills, supra n. 20, para. 216.

¹²¹ Ibid., para. 219.

3.4 Balance in international environmental law

3.4.1 Principles expressing the idea of balance

The principles presented in this section all aim to distribute the efforts involved in protecting the environment among the various stakeholders and to find balance between such protection and other considerations. Among these various principles, the first to emerge in its present form was the so-called 'polluter-pays' principle, which seeks to 'internalise' the cost of pollution or, in other words, to ensure that the financial burden of such pollution is borne by those who caused it. The principle of common but differentiated responsibilities ('CBDR'), also known as 'intra-generational equity', aims to distribute the cost of environmental policies among different States according to their historical responsibilities and respective capabilities. At the level of individuals, the principle of participation performs the function of weighing the interests of various groups and individuals involved in (or affected by) an activity with environmental consequences. As for the principle of 'inter-generational equity', it is intended to distribute the burden of environmental protection efforts between the present and future generations.

3.4.1.1 The polluter-pays principle

The polluter-pays principle can be understood in different ways.¹²² At first sight, it would appear as a mere version of the duty to repair the damage caused to others as applied in an environmental context. However, such a limited understanding would deprive this principle of any autonomous content, given that such duty is well-established in customary international law through both the no harm and the prevention principles.

On closer examination, the polluter-pays principle does have a sufficiently distinct content. To grasp such content one must take into account the manner in which industrial operations were conducted before the emergence of environmental protection considerations. The starting-point in this respect is the theory of 'externalities', characterised as the impact of a transaction (or, more generally, of an economic activity) on third parties that do not participate in it.¹²³ When this impact is negative and is not compensated, one can speak of a 'negative externality'. For example, the pollution of rivers by the normal or 'accidental' operation of a company imposes a cost on society. The question then arises of who should pay the cost: the company, consumers or society at large? If nothing is done, the society at large or those individuals most directly concerned (i.e. a sector of society) will bear the cost. Similarly, if the authorities intervene to treat polluted water, the cost is also borne by society at large (as it is borne by tax-payers). If, however, the cost is borne by the company who

¹²² On this principle, see P. Schwartz, 'Principle 16: The Polluter-pays Principle', in Viñuales, supra n. 29, pp. 429-50.

¹²³ See R. Coase, 'The Problem of Social Cost' (1960) 3 *Journal of Law and Economics* 1.

causes the pollution or transferred to consumers driving demand for the relevant product, one could speak of an 'internalisation' of the cost. This idea was initially formulated in OECD Council Recommendation, in 1972.¹²⁴ According to this instrument 'the cost of [measures adopted by the authorities to fight pollution] should be reflected in the cost of goods and services which cause pollution in production and/or consumption'.¹²⁵ The polluter-pays principle is now enshrined in Principle 16 of the Rio Declaration, which provides that:

[n]ational authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

The specific modalities of this internalisation are difficult to circumscribe because several parameters need to be defined, starting with the social cost itself, the probability (in the case of an accident or when the effects of an activity are not known with certainty), the determination of the share of each polluter (where a negative externality results from the activities of several companies), the compensation modalities (ex ante or ex post), and many other factors. In the context of certain conventions on civil liability for nuclear accidents or oil pollution damage, cost internalisation is effected through a system consisting of (i) a strict liability regime of the commercial operator, (ii) an obligation to take out adequate insurance and (iii) additional layers of compensation based on State and/or industry contributions.¹²⁶ As regards the protection of rivers, certain treaties incorporate the polluter-pays principle as a guiding principle.¹²⁷ A number of soft-law instruments, in addition to the Rio Declaration, also mention this principle.¹²⁸

The scope of these instruments is essentially to promote the internalisation of costs at the level of individuals and enterprises. Therefore, it would be difficult to invoke the polluter-pays principle in the distribution of social costs (incurred by the international community) generated by States. It seems more appropriate to refer in this respect either to the no harm principle, the prevention principle or the principle of 'common but differentiated responsibilities', discussed next.

¹²⁴ OECD Council Recommendation on Guiding Principles concerning the International Economic Aspects of Environmental Policies, C(72)128 (1972), 14 ILM 236 (1975).

¹²⁵ *Ibid.*, Annex, para. A.4. ¹²⁶ See *infra* Chapter 8.

¹²⁷ Helsinki Convention, *supra* n. 61, Art. 2(5)(b); OSPAR Convention, *supra* n. 61, Art. 2(2)(b); Danube Convention, *supra* n. 61, Art. 2(4).

¹²⁸ See e.g. 'ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development', 6 April 2002 ('New Delhi Declaration'), para. 3.1.

3.4.1.2 The principle of common but differentiated responsibilities

The principle of common but differentiated responsibilities ('CBDR') aims to distribute the effort required to manage environmental problems of a global nature, such as the protection of the ozone layer,¹²⁹ the fight against climate change¹³⁰ or the conservation and use of biodiversity,¹³¹ among States.

Situated at the intersection between development and environmental protection, this principle is intended to reconcile potentially conflicting requirements. On the one hand, developing countries see it as a way to gain recognition for their development needs, their reduced ability to contribute to the management of environmental problems and also their lower contribution to their creation. On the other hand, developed countries consider it as a tool to ensure participation of developing countries in the management of environmental problems and to ensure that the development process takes place within certain environmental bounds.

These considerations underpin the text of Principle 7 of the Rio Declaration, which provides that:

States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit for sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

This formulation shows both the 'common' dimension of the principle of CBDR, expressed as a duty to co-operate 'in a spirit of global partnership' to protect the environment, as well as the 'differential' dimension, expressed as the recognition by developed countries of their primary responsibility for environmental degradation and their increased ability to deal with its consequences. The origin of these two dimensions of the principle of CBDR can be found in two earlier ideas, namely the idea of a community of interest with respect to certain areas like Antarctica,¹³² outer space¹³³ or the

¹²⁹ CPOL, supra n. 55, Art. 2(2). ¹³⁰ UNFCCC, supra n. 11, Art. 3(1).

¹³¹ CBD, supra n. 7, Art. 20(4).

¹³² The Antarctic Treaty, 1 December 1959, 402 UNTS 71, preamble, para. 2.

¹³³ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 27 January 1967, 610 UNTS 205 ('Outer Space Treaty'), Art. 1.

seabed,¹³⁴ and the idea of differential treatment, present in international trade law¹³⁵ or the law of the sea.¹³⁶

Despite its similarities with these two earlier well-established ideas, the principle of CBDR should be considered as a new concept embodied, for the first time, in the ozone regime and further developed in 1992 with the adoption of the Rio Declaration as well as the introduction of this principle in the UNFCCC and the CBD. These three normative contexts (ozone, climate change and biodiversity) can also be seen as three ways to operationalise the principle of CBDR. With regard to the ozone regime, the preamble to the Vienna Convention of 1985 referred to 'the circumstances and particular requirements of developing countries'.¹³⁷ This element was also included in the text of the Convention, according to which the parties are to perform their obligations 'in accordance with the means at their disposal and their capabilities'¹³⁸ as well as in the form of a duty to co-operate, including in respect of technology transfer.¹³⁹ The Montreal Protocol to the Convention went further, providing in Article 5 for differentiated obligations for developing countries.¹⁴⁰ This amounted essentially to the granting of longer time-periods, under certain conditions, to meet their obligations under the Protocol. A second way to operationalise the principle of CBDR is illustrated by the UNFCCC and its Kyoto Protocol. Indeed, Article 3(1) of the UNFCCC explicitly enshrines the principle of CBDR in the following terms:

The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

The primary responsibility of developed countries (i.e. those listed in Annex I of the UNFCCC) under the UNFCCC has been implemented by the Kyoto Protocol, which requires them to meet quantified emissions targets¹⁴¹ as provided for in Annex B, while no new obligations are imposed on developing countries (i.e. those not listed in Annex I of the UNFCCC).¹⁴² A third way to operationalise the principle of CBDR is illustrated by the CBD, which seems to

¹³⁴ 'Declaration of Principles Governing the Seabed and the Ocean Floor, and the Subsoil Thereof, Beyond the Limits of National Jurisdiction', Res. 2749 (XXV), 17 December 1970 ('Seabed Declaration'), preamble, para. 4, Arts. 1-3; UNCLOS, supra n. 6, Art. 136.

¹³⁵ See R. Prebisch, 'Towards a New Trade Policy for Development', Report of the Secretary General to UNCTAD I, in Proceedings of the United Nations Conference on Trade and Development, UN Doc. E/CONF.46/141, vol. II, 1965, p. 1; 'Declaration on the Establishment of a New International Economic Order', Res. 3201 (S-VI), 1 May 1974, para. 4(n)-(p).

¹³⁶ See e.g. UNCLOS, supra n. 6, Arts. 69, 254. ¹³⁷ CPOL, supra n. 55, preamble, para. 3.

¹³⁸ Ibid., Art. 2(2). ¹³⁹ Ibid., Art. 4(2). ¹⁴⁰ Montreal Protocol, supra n. 56, Art. 5(1).

¹⁴¹ Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, 2303 UNTS 148 ('Kyoto Protocol'), Art. 3(1).

¹⁴² Ibid., Art. 10.

condition compliance by developing countries with their conservation obligations on the prior fulfilment of the financial and technology transfer obligations undertaken by developed countries.¹⁴³

Beyond the grounding of this principle in these or other treaty contexts, its legal status remains controversial.¹⁴⁴ Such uncertainty does not, for now, pose any major problems, as this principle has so far been called to perform two main functions, namely to influence the content of certain agreements and to assist in the interpretation of their provisions, for which an elucidation of the principle's current status in general international law is less pressing.

3.4.1.3 The principle of participation

While the principle analysed in the previous section concerns the relations between States, the principle of participation - or more precisely, the duty of States to provide various channels of participation to groups and individuals potentially affected by projects, activities or environmental policies - aims to consider the interests of these stakeholders in the relations among themselves (e.g. between the enterprises and individuals affected), or between private stakeholders and the State.¹⁴⁵ Like the principle of co-operation, the principle of participation is general in scope, extending beyond the sphere of environmental matters. By way of illustration, Article 25 of the 1966 International Covenant on Civil and Political Rights provides for a general right to participate in public affairs.¹⁴⁶ It is, however, in the environmental arena that the principle of participation has come to prominence over the last two decades. Some aspects of participation have already been discussed in connection with the principle of prior informed consent of indigenous peoples. The reader is referred to that section. Here, we focus on two main points, namely (i) the sources and (ii) the content of this principle.

Concerning the sources, the idea of increased public participation in environmental issues has been affirmed in Principle 10 of the Rio Declaration, which provides that:

[e]nvironmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and

¹⁴³ CBD, *supra* n. 7, Art. 20(4).

¹⁴⁴ See P. Cullet, 'Principle 7: Common but Differentiated Responsibilities', in Viñuales, *supra* n. 29, pp. 229-44; L. Rajamani, *Differential Treatment in International Environmental Law* (Oxford University Press, 2006).

¹⁴⁵ On this principle, see J. Ebbesson, 'Principle 10: Public Participation', in Viñuales, *supra* n. 29, pp. 287-309.

¹⁴⁶ International Covenant on Civil and Political Rights, 16 December 1966, 999 UNTS 171.

participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

This formulation suggests that public participation is important not only as a distributive instrument (weighing the interests at stake) but also, to some extent, as an instrument of prevention, through the democratic control of decision-making in environmental matters. Other instruments, particularly some treaties,¹⁴⁷ have given a firmer basis to the principle of participation in positive international law, although the question of its customary nature is still debated. In particular, the adoption of the Aarhus Convention¹⁴⁸ under the aegis of the UNECE has given a strong impetus to issues of participation in environmental matters. The influence of this Convention, which is open to accession by any State, can be detected at three levels, namely in States' obligation to adopt internal measures of public participation in environmental matters, in the establishment of a non-compliance procedure open to the public, and in its reception in the case-law of the ECtHR, which has referred to the Aarhus Convention to interpret certain human rights.

As regards the content, Principle 10 of the Rio Declaration introduced the three main components of what can be referred to as 'environmental democracy', i.e. the right to access environmental information, the right to participate in the decision-making process on environmental matters, and a right to judicial recourse, particularly (but not only) in the event the previous rights are denied. As already noted, these rights have subsequently been developed in Articles 4-5 (access to information), 6-8 (decision-making) and 9 (access to justice) of the Aarhus Convention. The interactions between the Convention and other treaties have paved the way for this 'triad' to be taken into account when interpreting a provision such as Article 8 of the European Convention on Human Rights, not only in cases where the respondent State is a party to the Aarhus Convention (Romania) but also where it is not (Turkey).¹⁴⁹ Whereas the latter point would suggest that the principle of participation could have a customary basis, in the Pulp Mills case the ICJ seemed to reject such a view, albeit in ambiguous terms. Indeed the Court noted in connection with certain instruments invoked by Argentina (not including the Aarhus Convention) that 'no legal obligation to consult the affected populations [arose]' from these instruments. However, the conclusion of the Court, as it is formulated, does not expressly affirm or deny the existence of a customary principle of participation. The question remains open.

¹⁴⁷ See P. Cullet and A. Gowlland-Gualtieri, 'Local Communities and Water Investments', in E. Brown Weiss, L. Boisson de Chazoumes and N. Bernasconi-Osterwalder (eds.), *Fresh Water and International Economic Law* (Oxford University Press, 2005), pp. 303-30.

¹⁴⁸ Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, 25 June 1998, 2161 UNTS 447 ('Aarhus Convention').

¹⁴⁹ *Taskin and Others v. Turkey*, ECtHR Application no. 46117/99, Decision (10 November 2004), paras. 99-100; *Tatar v. Romania*, ECtHR Application no. 67021/01, Decision (27 January 2009), para. 69.

In any event, even in the context of an instrument as progressive as the Aarhus Convention, the requirement of participation does not go as far as to provide the affected groups with a veto over the proposed activities.¹⁵⁰

3.4.1.4 The principle of inter-generational equity

The principle of inter-generational equity aims to distribute the quality and availability of natural resources and the necessary efforts for their conservation between present and future generations. As such, this principle can be considered as a manifestation of the old idea of nature conservation and the more recent concept of sustainable development.

There are traces of these origins in instruments both old and new. For example, the preamble of the International Convention for the Regulation of Whaling of 1946 contains a reference to the interest of 'nations of the world in safeguarding for future generations the great natural resources represented by the whale stocks'.¹⁵¹ Similarly, when in 1972 the Stockholm Conference attempted to circumscribe the province of environmental protection through the adoption of the Stockholm Declaration, it noted that: 'Man . . . bears a solemn responsibility to protect and improve the environment for present and future generations'.¹⁵² Later, when the Report of the Brundtland Commission introduced the concept of sustainable development in 1987, the focus was on meeting the needs of present generations without compromising those of future ones.¹⁵³ It is in this sense that the modern principle of inter-generational equity is expressed in Principle 3 of the Rio Declaration, which states that: '[t]he right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations'. Similarly, in the *Gabčíkovo-Nagymaros Project* case, the ICJ noted that:

[o]wing to new scientific insights and to a growing awareness of the risks for mankind - for present and future generations - of pursuit of such interventions [in nature] at an unconsidered and unabated pace, new norms and standards have been developed.¹⁵⁴

However, despite significant efforts to define the contours of the principle in treaties, case-law and commentary,¹⁵⁵ the foundation of the principle in

¹⁵⁰ See Aarhus Convention, supra n. 148, Arts. 6(8), 7, and 8 in fine; Aarhus Convention: An Implementation Guide, pp. 109-110 (available at: www.unece.org).

¹⁵¹ International Convention for the Regulation of Whaling with Schedule of Whaling Regulations, 2 December 1946, 161 UNTS 361, preamble, para. 1.

¹⁵² Declaration on the United Nations Conference on the Human Environment, 16 June 1972, 11 ILM 1416 (1972) ('Stockholm Declaration'), Principle 1.

¹⁵³ Report of the World Commission on Environment and Development: Our Common Future, UN Doc. A/42/427, Annex, 4 August 1987, para. 1.

¹⁵⁴ *Gabčíkovo-Nagymaros Project*, supra n. 10, para. 140.

¹⁵⁵ See E. Brown Weiss, In *Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Dobbs Ferry: Transnational Publishers, 1989); C. Molinari, 'Principle 3: From a Right to Development to Intergenerational Equity', in *Viñuales*, supra n. 29, pp. 139-56.

positive law is still debated. An interesting step in this connection was made by the Supreme Court of the Philippines in the *Minors Oposa* case. There, the principle of inter-generational equity provided the basis for the admissibility of a collective action ('class suit') initiated by a group of Philippine children representing their interests as well as the interests of future generations.¹⁵⁶ The effective use of inter-generational equity as a primary norm in this case should not, however, lead to underestimate the considerable uncertainties surrounding both the principle's status and its content in international law.

3.4.2 Concepts expressing the idea of balance

3.4.2.1 Overview

Since its modern inception, international environmental law has been shaped by a number of concepts or 'programmes', whose function is not to operate as primary norms but, rather, to guide the formulation of such norms and, more generally, the overall structure of certain environmental regimes. In this area, the terminology varies considerably, making it difficult to identify the most relevant concepts or to specify the relations among them. It is therefore necessary to keep in mind the type of programme underlying the use of such concepts in an environmental regime. As a general matter, these concepts are all designed to distribute the benefits and the burden of 'using' the environment, either in the context of a State's growth/development policies or, more specifically, in the sharing of a common resource among States.

In this section, we discuss four 'concepts' selected on the basis of the programmes they seek to express. The first is the concept of 'sustainable development', which aims to integrate, in many ways, the demands of growth and development (both economic and social) with the protection of the environment. Then, we look at three concepts that, despite their terminological proximity, express separate programmes,¹⁵⁷ namely the concepts of 'common area' (free access and prohibition on the appropriation of a resource, accompanied by certain obligations), the 'common heritage of humankind' (joint management of a resource located outside State control) and 'common concern of mankind' (co-operation in the management, by each State, of a resource whose 'common' character is not linked to its location).¹⁵⁸

¹⁵⁶ See *Juan Antonio Oposa and others. v. Fulgencio S. Factoran, Jr., and others*, Supreme Court of the Philippines, Decision (30 June 1993), para. 22.

¹⁵⁷ On the theoretical foundations of these programmes, see P.-M. Dupuy, *Droit international public* (Paris: Dalloz, 2008), pp. 775-7.

¹⁵⁸ See J. Brunnée, 'Common Areas, Common Heritage, and Common Concern', in Bodansky et al., *supra* n. 1, pp. 552-73.

3.4.2.2 Sustainable development

No concept of international environmental law has been used and abused more than the concept of sustainable development. Originally introduced in 1980 in a joint report published by UNEP, the World Wildlife Fund ('WWF') and the International Union for the Conservation of Nature ('IUCN'),¹⁵⁹ the concept of sustainable development gained recognition with the publication of the Brundtland Commission's report 'Our Common Future' in 1987. Subsequently, it featured widely in many texts of all kinds, especially after the Rio Conference in 1992. However, the political use of this concept is less relevant for present purposes than its legal use. For this reason, we focus here on its legal foundation as well as its function in international environmental law.¹⁶⁰ In other words, we analyse the type of legal programme (by contrast with the operational programme expressed in Agenda 21) conveyed by the concept of sustainable development.

The essence of this concept is expressed in Principle 4 of the Rio Declaration, which provides: '[i]n order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it'. This definition was further specified ten years later at the Johannesburg Summit on Sustainable Development. There, a 'Political Declaration' was adopted, the terms of which played an important role in clarifying the components of the concept of sustainable development. According to paragraph 5 of this instrument 'economic development, social development and environmental protection' constitute the 'interdependent and mutually reinforcing pillars of sustainable development'.¹⁶¹ Shortly before, the International Law Association ('ILA') had adopted the 'New Delhi Declaration on the Principles of International Law Related to Sustainable Development' which, in its preamble, formulated the programme conveyed by the concept of sustainable development as:

a comprehensive and integrated approach to economic, social and political processes, which aims at the sustainable use of natural resources of the Earth and the protection of the environment on which nature and human life as well as social and economic development depend and which seeks to realize the right of all human beings to an adequate living standard on the basis of their active, free and meaningful participation in development and in the fair distribution of benefits resulting therefrom, with due regard to the needs and interests of future generations.¹⁶²

¹⁵⁹ IUCN, UNEP, WWF, World Conservation Strategy. Living Resource Conservation for Sustainable Development (1980).

¹⁶⁰ See N. Schrijver, 'The Evolution of Sustainable Development in International Law', (2007) 328 *Recueil des cours de l'Académie de droit international de La Haye*, 217-412; V. Barral and P.-M. Dupuy, 'Principle 4: Sustainable Development through Integration', in Viñuales, *supra* n. 29, pp. 157-79.

¹⁶¹ Report of the World Summit on Sustainable Development, 4 September 2002, A/CONF.199/20, Chapter I, item 1 Political Declaration, para. 5.

¹⁶² New Delhi Declaration, *supra* n. 128, preamble (italics added).

This formulation contains the main components that legal commentators attach to the concept of sustainable development, namely (i) the need to take into account the interests of future generations, (ii) the duty of every State to exploit its natural resources in a 'sustainable' way, (iii) in doing so, the duty of each State to take into account the interests of other States and (iv) the duty of States to incorporate environmental considerations into their development policies.¹⁶³ We have already studied the first three components in our analysis of the principles of inter-generational equity, no harm and prevention. However, to understand the programme conveyed by the concept of sustainable development it is necessary to go further because, first, we have not yet developed certain aspects of the programme (including the issue of the integration of environmental considerations in development policies), and, second, legal practice often refers to other principles to express the programme of sustainable development, which also merit attention here.

Regarding the issue of integration, it had been emphasised already at the time of the Stockholm Conference. Principle 13 of the Stockholm Declaration states indeed that:

[i]n order to achieve a more rational management of resources and thus to improve the environment, States should adopt an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve environment for the benefit of their population.¹⁶⁴

The Rio Declaration echoes this view in Principle 4, albeit in more general terms. Thus characterised, however, the issue of integration raises an important practical question: how is the duty of integration to be applied in dispute settlement? In the *Gabčíkovo-Nagymaros Project* case, the ICJ referred to the inclusiveness of the concept of sustainable development, without giving it the character of a primary norm or 'principle'. The Court observed that '[t]his need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development'.¹⁶⁵ However, this conclusion was challenged by the Vice-President of the Court, Judge Weeramantry, in his separate opinion:

The Court has referred to it as a concept in paragraph 140 of its Judgment. However, I consider it to be more than a mere concept, but as a principle with normative value which is crucial to the determination of this case.¹⁶⁶

The arbitral tribunal in the *Iron Rhine Arbitration (Belgium/Netherlands)* of May 2005 confirmed the position of Judge Weeramantry noting that:

¹⁶³ See P. Sands, *Principles of International Environmental Law* (Cambridge University Press, 2003), p. 253. See more generally Schrijver, *supra* n. 160, pp. 339-65.

¹⁶⁴ Stockholm Declaration, *supra* n. 152, Principle 13.

¹⁶⁵ *Gabčíkovo-Nagymaros Project*, *supra* n. 10, para. 140.

¹⁶⁶ *Ibid.*, Separate Opinion of Judge Weeramantry, p. 85.

where development may cause significant harm to the environment there is a duty to prevent, or at least mitigate, such harm. This duty, in the opinion of the Tribunal, has now become a principle of general international law. This principle applies not only in autonomous activities but also in activities undertaken in implementation of specific treaties between the Parties.¹⁶⁷

Yet, in the recent decision of the ICJ in the Pulp Mills case, the Court reaffirmed the conception of sustainable development expressed by the majority in the Gabčíkovo-Nagymaros case, namely that this is a concept or objective that must guide the negotiations between the parties.¹⁶⁸ Under these circumstances, we must conclude that the question of whether sustainable development can operate as a primary norm is still unsettled in general international law.

Concerning the use of other principles to convey the programme of sustainable development, instruments such as the New Delhi Declaration, the Report of the Expert Group convened by the CSD,¹⁶⁹ or the report prepared for the European Commission in 2000,¹⁷⁰ all suggested that other principles do play a role. They refer, for example, to the principles relating to the elimination of poverty,¹⁷¹ precaution,¹⁷² 'good governance',¹⁷³ the 'aesthetic value of nature',¹⁷⁴ the 'obligatory restoration of disturbed ecosystems',¹⁷⁵ the 'development of small and fragile ecosystems',¹⁷⁶ 'cooperation in preventing the relocation of harmful activities and substances',¹⁷⁷ the 'implementation of international obligations',¹⁷⁸ or 'monitoring compliance with international obligations',¹⁷⁹ to name but a few of these 'principles'. It seems clear that at least some of these 'principles' are simply conceptual developments with no actual grounding in international law. This applies, for example, to the

¹⁶⁷ Iron Rhine Arbitration ('Ijzeren Rijn') (Belgium/Netherlands), Award (24 May 2005), RIAA XXVII, pp. 35-125, para. 59.

¹⁶⁸ Pulp Mills, supra n. 20, paras. 75-7 and 177. ¹⁶⁹ Report-Principles, supra n. 17.

¹⁷⁰ European Commission, The Law of Sustainable Development. General Principles, 2000 ('EC - General Principles').

¹⁷¹ 'The Principle of Equity and the Eradication of Poverty', New Delhi Declaration, supra n. 128, Principle 2.

¹⁷² 'The Principle of the Precautionary Approach to Human Health, Natural Resources and Ecosystems', *ibid.*, Principle 4.

¹⁷³ 'Principle of Good Governance', *ibid.*, Principle 6.

¹⁷⁴ 'Principle of the Aesthetic Value of Nature', EC - General Principles, supra n. 170, p. 121. ¹⁷⁵

'Principle of the Obligatory Restoration of Disturbed Ecosystems', *ibid.*, p. 91.

¹⁷⁶ 'Principle of the Restrained Development of Fragile Ecosystems', *ibid.*, p. 101.

¹⁷⁷ 'Cooperation to Discourage or Prevent the Relocation and Transfer of Activities and Substances that Cause Severe Environmental Degradation or are Harmful to Human Health', Report-Principles, supra n. 17, paras. 121-2.

¹⁷⁸ 'National Implementation of International Commitments', Report-Principles, supra n. 17, paras. 153-4.

¹⁷⁹ 'Monitoring of Compliance with International Commitments', Report-Principles, supra n. 17, paras. 155-60.

'principle of the aesthetic value of nature', which is an attempt to transpose certain instruments of national law upon the international level. Other 'principles' are generalisations of certain obligations arising from environmental treaties or of objectives pursued by these latter or, still, of specific components of well-established principles. This is the case, for example, of the array of principles relating to 'cooperation to discourage or prevent the relocation and transfer of activities and substances that cause severe environmental degradation or are harmful to human health'.¹⁸⁰ Finally, some of these 'principles' are essentially attempts to generalise some processes, such as the 'supervision of international obligations' or the 'national implementation of international obligations', which are found in a number of environmental treaties. While recognising the value of these efforts towards the progressive development of international environmental law and the reorganisation of its concepts or components, greater uniformity seems desirable in order to facilitate the analysis of the legal foundations of certain principles or concepts in international law.

3.4.2.3 Common areas

The concept of 'common area' or 'res communis' is very old. From its ancient sources in Roman law to its development by the jurists of the sixteenth century (Vitoria, Suarez) and its systematisation by Grotius in the seventeenth century, this concept was first used to express the status of the high seas in international law. The programme conveyed by this concept is characterised by two main components, namely free access to a common resource and the impossibility of appropriation. However, this is a programme that could potentially open the door to abuses in the use of common areas by States, especially dominant States.

A possible solution to this problem is to correlate the access and use of the common resource with duties to ensure its protection. This is one of the approaches adopted by UNCLOS,¹⁸¹ which guarantees free access to and use of the high seas, while imposing restrictions on the use of biological resources¹⁸² and, more generally, some duties relating to the protection of the marine environment¹⁸³ and the interests of other States.¹⁸⁴ Freedom of the high seas also includes the freedom to fly over the air space, which is equivalent to the distribution of another 'common area'.¹⁸⁵

¹⁸⁰ See supra Section 3.3.5.

¹⁸¹ UNCLOS has also adopted an approach that is different from the concept of 'common area', but that was deemed more effective as regards the exploitation and protection of marine resources, namely the 'territorialisation' of large areas that previously were part of the high seas. Thus, in accordance with Part V of UNCLOS, coastal States exercise 'sovereign rights' (which should not be equated with the exercise of 'sovereignty') over resources that are located in their 'exclusive economic zone', i.e. an area up to 200 nautical miles from the baselines from which the width of the territorial sea is measured. See UNCLOS, supra n. 6.

¹⁸² Ibid., Arts. 116-120. ¹⁸³ Ibid., Art. 192. ¹⁸⁴ Ibid., Art. 87(2). ¹⁸⁵ Ibid., Art. 87(1)(b).

A second example of a common area is Antarctica. The preamble to the Antarctic Treaty, signed in 1959, recognised that it was in 'the interest of all mankind' that Antarctica be used for peaceful purposes only.¹⁸⁶ The programme expressed by this concept is relatively similar to that of the two other common areas mentioned but with some important nuances. For example, the Treaty 'freezes' all sovereignty claims over the Antarctic zone during its lifetime,¹⁸⁷ which implicitly suggests that 'appropriation' could become possible at some future point in time. As for the use of the resources (biological, mineral, other¹⁸⁸) of Antarctica, it is subject to a fairly detailed regime set up by a series of treaties of the 'Antarctic Treaty System'.¹⁸⁹

A third example of a common area is outer space, including the Moon and other celestial bodies. The principles of free access and non-appropriation in this context were established by the UN General Assembly in 1963 with the adoption of the 'Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space',¹⁹⁰ stressing the 'common interest to all mankind' in the exploration and exploitation of outer space for peaceful purposes.¹⁹¹ This was confirmed by the adoption in 1967 of the Treaty on Outer Space,¹⁹² which provides in Articles I and II, respectively, for the principle of free access and the prohibition of appropriation. The risks associated with a race to the occupation and exploitation of outer space have therefore been mitigated to some extent. In addition, the Treaty on Outer Space introduced some other obligations, such as the prohibition to place in orbit weapons of mass destruction,¹⁹³ the duty to avoid contamination of outer space or changes in the Earth's environment,¹⁹⁴ and a regime of liability for damage to another State party.¹⁹⁵ This legal situation was subsequently modified by the Moon

¹⁸⁶ Antarctic Treaty, supra n. 132. ¹⁸⁷ Ibid., Art. IV.

¹⁸⁸ Such as the enormous freshwater resources which constitute the icebergs. See J. E. Viñuales, 'Iced Freshwater Resources: A Legal Exploration' (2009) 19 Yearbook of International Environmental Law 188.

¹⁸⁹ This includes, in the area of biological resources, the Convention for the Conservation of Antarctic Seals ('CCAS'), 1 June 1972, and the Convention for the Conservation of Antarctic Marine Living Resources ('CCAMLR'), 20 May 1980. In terms of mineral resources, a Convention on the Regulation of Antarctic Mineral Resource Activities ('CRAMRA') was concluded in June 1988. However, it has not been ratified, and in any event, it has been deprived of its object with the adoption, on 4 October 1991, of the Protocol to the Antarctic Treaty on the Protection of the Environment, Art. 7 providing that '[a]ny activity relating to mineral resources, other than scientific research, shall be prohibited'.

¹⁹⁰ 'Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space', 13 December 1963, UN Doc. A/18/1962, paras. 2 and 3.

¹⁹¹ Ibid., preamble. ¹⁹² Outer Space Treaty, supra n. 133. ¹⁹³ Ibid., Art. IV.

¹⁹⁴ Ibid., Art. IX.

¹⁹⁵ Ibid., Art. VII. This system was completed with the adoption of the Convention on International Liability for Damage Caused by Space Objects, 29 March 1972 961 UNTS 187.

Treaty, concluded in 1979, which placed the Moon under the status of 'common heritage of mankind'.¹⁹⁶

3.4.2.4 Common heritage of mankind

The concept of 'common heritage of mankind' conveys a different programme from those we have examined up to now. While excluding the appropriation of a resource (as is the case for common areas), this programme places the exploitation of the resource under common management. As a result, access to the resource is reserved exclusively to the entity in charge of the joint management. However, the joint management is intended for the benefit of all States, both those who have the technical and financial resources to exploit the resource and those who do not. Of course, the details of the programme will vary from case to case.

In the context of the Moon Treaty, where, as noted above, the Moon is conferred the status of 'common heritage of mankind', Article 11(5) provides that:

States Parties . . . undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the Moon as such exploitation is about to become feasible.¹⁹⁷

However, in the absence of ratification of this treaty by the States most active in the exploitation of outer space, its practical effect is very limited.

The concept of common heritage of mankind has been further developed in connection with the management of the seabed.¹⁹⁸ The first development occurred in 1970 when the UN General Assembly adopted the 'Declaration of Principles Governing the Seabed and the Ocean Floor, and Subsoil Thereof, beyond the Limits of National Jurisdiction',¹⁹⁹ which placed the 'Area' and its resources under the status of common heritage of mankind. This characterisation has been taken up in Part XI of the UNCLOS, which subjects the Area to a regime of international management.²⁰⁰ In particular, Article 137(2) provides that:

[a]ll rights in the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act. These resources are not subject to alienation. The minerals recovered from the Area, however, may only be alienated in accordance with this Part and the rules, regulations and procedures of the Authority.²⁰¹

The programme conveyed by this provision was very controversial, preventing the entry into force of the Convention for over a decade. It

¹⁹⁶ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 18 December 1979, 1363 UNTS 3 ('Moon Treaty'), Art. 11(1).

¹⁹⁷ *Ibid.*, Art. 11(5).

¹⁹⁸ See R.-J. Dupuy, 'La notion de patrimoine commun de l'humanité appliquée aux fonds marins', in *Mélanges Colliard* (Paris: Pedone, 1984), pp. 197-205.

¹⁹⁹ See Seabed Declaration, *supra* n. 134. ²⁰⁰ UNCLOS, *supra* n. 6, Part XI.

²⁰¹ *Ibid.*, Art. 137(2).

was only with the adoption in 1994 of the New York Agreement on the application of Part XI of UNCLOS that the entry into force of the latter became possible.²⁰² While under the New York Agreement the regime of exploration and exploitation of the Area was watered down in response to the concerns of industrialised countries, it nevertheless represents the clearest expression of the programme conveyed by the concept of common heritage of mankind.

Beyond these two examples, references to the concept of common heritage of mankind are rare. Of note are the references to this concept in the 1972 UNESCO Convention on the Protection of the World Cultural and Natural Heritage²⁰³ and, in a different context, in the 'Universal Declaration on the Human Genome and Human Rights', of 1997.²⁰⁴ However, unlike the previous examples, these references are not linked to a programme of joint management of the object in question. This said, subsequent formulations do include this link, which explains in part why States have been increasingly reluctant to use this concept and have preferred to refer to the concept of 'common concern of humankind'.

3.4.2.5 Common concern of humankind

The concept of common concern of humankind emerged in the 1990s, even though it is possible to find similar earlier ideas. The programme conveyed by this concept is clearly different from that associated with the concept of common heritage of mankind in that the object can be exploited by individual States and is not jointly managed as a common resource. Instead, States are subject to certain requirements regarding the individual exploitation. The specific requirements vary depending on the context, but the emphasis is on cooperation, access regulation and/or protection of a resource. The two main examples of this concept are provided by the CBD and the UNFCCC.

Regarding the first, the reluctance of developing countries (who hold most of the Earth's biological resources) prevented the application of the concept of common heritage of mankind to biological diversity as a resource.²⁰⁵ As such, the preamble of the CBD merely stated that 'the conservation of biological diversity is a common concern of humankind', adding immediately after that

²⁰² See generally, R. R. Churchill and A. V. Lowe, *The Law of the Sea* (Manchester University Press, 3rd edn, 1999), Chapter 11.

²⁰³ Convention Concerning the Protection of the World Cultural and Natural Heritage, 16 November 1972, 1037 UNTS 151 ('World Heritage Convention'). The preamble provides, notably, that 'parts of the cultural or natural heritage are of outstanding interest and therefore need to be preserved as part of the world heritage of mankind as a whole'.

²⁰⁴ Resolution 29 C/17, UNESCO GC, 29th Sess. (1997), endorsed by UNGA A/RES/53/152. According to Article 1, 'In a symbolic sense, [the human genome] is the heritage of humanity'. See S. Maljean-Dubois, 'Bioéthique et droit international' (2000) 46 *Annuaire français de droit international* 82.

²⁰⁵ On the origin of the CBD, see M.-A. Hermitte, 'La convention sur la diversité biologique' (1992) 38 *Annuaire français de droit international* 844.

'States have sovereign rights over their own biological resources' and that '[they] are responsible for conserving their biological diversity'.²⁰⁶ Thus, the CBD establishes the duties of conservation for States in respect of biological 'diversity'²⁰⁷ and a system of (limited) access by other States to biological (and particularly genetic) 'resources'.²⁰⁸

As for the UNFCCC, the emphasis is on the duty of co-operation to address the 'adverse effects' of climate change on the planet, which is a 'common concern of humankind'.²⁰⁹ Thus, unlike the CBD, the UNFCCC focuses on a global resource indirectly defined by Article 2 of the Convention. This resource is, in essence, a stable climatic system, and it must be preserved through the control of anthropogenic interference with the atmospheric composition. Although this 'resource' is global because it transcends the territory of any and all States, its preservation nevertheless requires the adoption of appropriate measures by each State individually (national measures) and/or in co-operation with other States (international measures).

3.5 From principles to regulation

The conceptual matrix of international environmental law analysed in the foregoing paragraphs can be seen, in practice, as a set of 'policies' that are implemented by environmental treaties. Understanding these policies, their operation and their legal grounding thus amounts to learning the underpinnings of the more sophisticated environmental regimes analysed in the next four chapters of this book.

In some cases, a treaty is fully devoted to the advancement of one of these policies. Examples include the Aarhus Convention, which embodies the principle of participation, or the Espoo Convention, which spells out the requirement to conduct an environmental impact assessment. More often, however, environmental regimes implement more than one policy. By way of illustration, the POP Convention is premised both on the precautionary approach and on the prevention principle. Similarly, the ozone and climate change regimes rest upon several principles, including precaution, common but differentiated responsibilities and intergenerational equity.

Different regimes may spell out the same underlying policy in different ways. Thus, as will be discussed in Chapters 5 and 7, the principle of common but differentiated responsibilities is translated in significantly different terms by the ozone regime (all States have similar quantified reduction targets but developing States are given additional assistance and longer deadlines), the climate change regime (some States have quantified reduction targets and others have not) and the POP Convention (differences are managed through a sophisticated system of time-limited exceptions available to all States).

²⁰⁶ CBD, *supra* n. 7, preamble (italics added). ²⁰⁷ *Ibid.*, Arts. 6-11.

²⁰⁸ *Ibid.*, Arts. 15 and 19, especially. ²⁰⁹ UNFCCC, *supra* n. 11, preamble.

There may be cases where a policy is stated as the underlying basis of a treaty but the content of the latter prevents such policy from being effectively translated. This argument could be made either when the treaty is too elementary, such as the 1997 UN Convention on Watercourses, or when it is perhaps too ambitious, such as Part XI of UNCLOS which places the 'Area' under a common heritage regime that, so far, has proved difficult to implement.

For present purposes, what matters most is to keep these considerations in mind when embarking on the study of the specific treaty regimes examined in the following chapters.

Select bibliography

- Agius, E. and S. Busuttill (eds.), *Future Generations and International Law* (London: Earthscan, 1998).
- Barral, V., *Le développement durable en droit international: Essai sur les incidences juridiques d'un concept évolutif* (Ph.D. dissertation defended at the European University Institute, 2007).
- 'Sustainable Development in International Law: Nature and Operation of an Evolutive Legal Norm' (2012) 23 *European Journal of International Law* 377.
- Barrios, P., 'The Rotterdam Convention on Hazardous Chemicals: A Meaningful Step towards Environmental Protection?' (2004) 16 *Georgetown International Environmental Law Review* 679.
- Beyerlin, U., 'Different Types of Norms in International Environmental Law', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007), pp. 425-48.
- Birnbacher, D., *La responsabilité envers les générations futures* (Paris: Presses universitaires de France, 1994).
- Bodansky, D., 'Deconstructing the Precautionary Principle', in D. Caron and H. N. Scheiber (eds.), *Bringing New Law to Ocean Waters* (Leiden: Martinus Nijhoff, 2004), pp. 381-91.
- Boisson de Chazournes, L. and S. Maljean-Dubois, 'Les principes du droit international de l'environnement', in *Juris-classeur environnement*, fascicule 146-15 (2011).
- Boyle, A., 'Making the Polluter Pay? Alternatives to State Responsibility in the Allocation of Transboundary Environmental Cost', in F. Francioni and T. Scovazzi (eds.), *International Responsibility for Environmental Harm* (London: Graham & Trotman, 1991), pp. 363-79.
- Brown Weiss, E., *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Dobbs Ferry: Transnational Publishers, 1989).
- Brunnée, J., 'Common Areas, Common Heritage, and Common Concern', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007), pp. 552-73.
- Commission on Sustainable Development, *Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development*, Geneva, Switzerland, 26-28 September 1995.
- Craik, N., *The International Law of Environmental Impact Assessment* (Cambridge University Press, 2008).

- Cullet, P., 'Differential Treatment in International Law: Towards a New Paradigm of Inter-State Relations' (1999) 10 *European Journal of International Law* 549.
- Differential Treatment in International Environmental Law (The Hague: Kluwer, 2003).
- De Sadeleer, N., *Essai sur la genèse et la portée juridique de quelques principes en droit de l'environnement* (Bruxelles: Bruylant, 1999).
- Dupuy, P.-M., 'Formation of Customary International Law and General Principles' in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007), pp. 449-69.
- 'Où en-est le droit de l'environnement à la fin du siècle?' (1997) *Revue générale de droit international public* 873.
- Dupuy, R.-J., 'La notion de patrimoine commun de l'humanité appliquée aux fonds marins', in *Mélanges Colliard* (Paris: Pedone, 1984), pp. 197-205.
- Ebbesson, J., 'The Notion of Public Participation in International Environmental Law' (1997) 8 *Yearbook of International Environmental Law* 51.
- Epiney, A. and M. Scheyli, *Strukturprinzipien des Umweltvölkerrechts* (Baden-Baden: Nomos, 1998).
- European Commission, *The Law of Sustainable Development. General Principles* (2000).
- Francioni, F., 'Sviluppo sostenibile e principi di diritto internazionale dell'ambiente', in *Società Italiana di Diritto Internazionale, Il principio dello sviluppo sostenibile nel diritto internazionale ed europeo dell'ambiente* (Naples: Editoriale Scientifica, 2007), pp. 40-61.
- Francioni, F. and H. Neuhold, 'International Cooperation for the Protection of the Environment: The Procedural Dimension', in W. Lang, H. Neuhold and K. Zemanek (eds.), *Environmental Protection and International Law* (Dordrecht: Martinus Nijhoff, 1991), pp. 203-26.
- French, D., 'Developing States and International Environmental Law: The Importance of Differentiated Responsibilities' (2000) 49 *International and Comparative Law Quarterly* 35.
- Gaines, S., 'The Polluter-Pays Principle: From Economic Equity to Environmental Ethos' (1991) 26 *Texas International Law Journal* 463.
- Hostiou, R., 'Le lente mais irrésistible montée en puissance du principe de participation' (2003) 112 *Droit de l'environnement* 182.
- Kindall, M. P. A., 'UNCED and the Evolution of Principles of International Environmental Law' (1992) 25 *John Marshall Law Review* 19.
- Kiss, A., 'The Rio Declaration on Environment and Development', in L. Campiglio, L. Pineschi, D. Siniscalco and T. Treves (eds.), *The Environment after Rio: International Law and Economics* (London: Martinus Nijhoff, 1994), pp. 55-64.
- Kovar, J. D., 'A Short Guide to the Rio Declaration' (1993) 4 *Colorado Journal of International Environmental Law and Policy* 119.
- Lecucq, O. and S. Maljean-Dubois (eds.), *Le rôle du juge dans le développement du droit de l'environnement* (Bruxelles: Bruylant, 2008).
- Lucchini, L., 'Le principe de précaution en droit international de l'environnement: Ombres plus que lumières' (1999) 45 *Annuaire français de droit international* 710.
- Maljean-Dubois, S., 'L'accès à l'information et la reconnaissance d'un droit à l'information environnementale', in S. Maljean-Dubois (ed.), *L'effectivité du droit européen*

- de l'environnement: contrôle de la mise en oeuvre et sanction du non respect (Paris: La documentation française, 2000), p. 25.
- Martin-Bidou, P., 'Le principe de précaution en droit international de l'environnement' (1999) *Revue générale de droit international public* 631.
- Mbengue, M., *Essai sur une théorie du risque en droit international public. L'anticipation du risque environnemental et sanitaire* (Paris: Pedone, 2009).
- McDorman, T., 'The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade: Some Legal Notes' (2004) *13 Review of European Community and International Environmental Law* 187.
- Morgera, E. and J. Wingard, *Principles for Developing Sustainable Wildlife Management Laws*, FAO Legal Papers (2008).
- Munro, R. D. and J. G. Lammers, *Environmental Protection and Sustainable Development*, Expert Group on Environmental Law of the World Commission on Environment and Development (1986).
- Panjabi, R. K. L., 'From Stockholm to Rio: A Comparison of the Declaratory Principles of International Environmental Law' (1993) *21 Denver Journal of International Law and Politics* 215.
- Paradell-Trius, L., 'Principles of International Environmental Law: An Overview' (2000) *9 Review of European Community and International Environmental Law* 93.
- Porras, I. M., 'The Rio Declaration: A New Basis for International Co-operation' (1992) *1 Review of European Community and International Environmental Law* 245.
- Rajamani, L., *Differential Treatment in International Environmental Law* (Oxford University Press, 2006).
- Ramlogan, R., *Sustainable Development: Towards a Judicial Interpretation* (Leiden: Martinus Nijhoff, 2010).
- Redgwell, C., 'The International Law of Public Participation: Protected Areas, Endangered Species and Biological Diversity' in D. Zillman, A. Lucas and G. Pring (eds.), *Human Rights in Natural Resource Development - Public Participation in the Sustainable Development of Mining and Energy Resources* (Oxford University Press, 2002), pp. 187-214.
- 'Regulating Trade in Dangerous Substances: Prior Informed Consent under the 1998 Rotterdam Convention', in A. Kiss, D. Shelton and K. Ishibashi (eds.), *Economic Globalization and Compliance with International Environmental Agreements* (The Hague: Kluwer, 2003), pp. 75-88.
- Robinson, N. A., 'EIA Abroad: The Comparative and Transnational Experience', in S. G. Hildebrand and J. B. Cannon (eds.), *Environmental Analysis: The NEPA Experience* (Boca Raton: Lewis, 1993), pp. 679-702.
- Romi, R., 'Le principe pollueur-payeur, ses implications et ses applications' (1991) *8 Droit de l'environnement* 46.
- Sands, P., 'International Law in the Field of Sustainable Development' (1994) *65 British Yearbook of International Law* 303.
- Schrijver, N., 'The Evolution of Sustainable Development in International Law' (2007) *329 Recueil des cours de l'Académie de droit international de La Haye* 217-412.
- Schwartz, P., 'The Polluter-pays Principle', in J. E. Viñuales (ed.), *The Rio Declaration on Environment and Development. A Commentary* (Oxford University Press, 2015).

- Scovazzi, T., 'Sul principio precauzionale nel diritto internazionale dell'ambiente' (1992) *Rivista di diritto internazionale* 699.
- Shelton, D., 'Stockholm Declaration (1972) and Rio Declaration (1992)', *Max Planck Encyclopedia of Public International Law*, www.mpepil.com.
- Smets, H., 'Le principe pollueur payeur, un principe économique érigé en principe de droit de l'environnement?' (1998) *Revue générale de droit international public* 85.
- Supanich, G., 'The Legal Basis of Intergenerational Responsibility: An Alternative View - The Sense of Intergenerational Identity' (1992) 3 *Yearbook of International Environmental Law* 94.
- Trouwborst, A., *Evolution and Status of the Precautionary Principle in International Law* (The Hague: Kluwer Law International, 2002).
- Viñuales, J. E., 'The Contribution of the International Court of Justice to the Development of International Environmental Law: A Contemporary Assessment' (2008) 32 *Fordham International Law Journal* 232.
- (ed.), *The Rio Declaration on Environment and Development. A Commentary* (Oxford University Press, 2015).
- Virally, M., 'Le rôle des "principes" dans le développement du droit international', *Le droit international en devenir. Essais écrits au fil des ans* (Paris: Presses Universitaires de France, 1990), pp. 195-212.
- Voigt, C., *Sustainable Development as a Principle of International Law* (Leiden: Martinus Nijhoff, 2009).
- Wirth, D. A., 'The Rio Declaration on Environment and Development: Two Steps Forward and One Back, or Vice Versa' (1995) 29 *Georgia Law Review* 599.
- Woods, C., *The Environment, Intergenerational Equity and Long-term Investments* (doctoral dissertation, University of Oxford, 2011).
- Xue Hanqin, *Transboundary Damage in International Law* (Cambridge University Press, 2003).