

Introduction

PREVENTION AS THE CORNERSTONE OF INTERNATIONAL ENVIRONMENTAL LAW

International environmental law is based on the will to avoid causing harm to the environment. It is widely admitted – following the old adagio ‘prevention is better than cure’ – that the protection of the environment is best ensured by preventing harm from occurring rather than by repairing the damage. The specificity of environmental harm dictates a preventive approach: damage to the environment is often irreversible,¹ and restoration of the situation prevailing prior to harm is often impossible² or involves very high costs.³

The preventive rationale was first consecrated in international law in the form of a prohibition to cause harm to the territory of another State, as recognized in 1941 by the landmark *Trail Smelter* award.⁴ It then consolidated in international law in the form of Principle 21 of the 1972 Stockholm Declaration on the Human Environment (Stockholm Declaration) that formulated the principle in a manner that entailed, at the time, a significant degree of progressive development.

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause

¹ *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)* (Judgment) (1997) ICJ Rep 7, para 140.

² International Law Commission (ILC), ‘Draft Articles on Prevention of Transboundary Harm from Hazardous Activities (with Commentaries)’ (2001) *Yearbook of the International Law Commission* (vol II, part 2) 148, Commentaries to the Articles, para 2, at 148.

³ J Strasser, ‘Preventing Pollution’ (1997) 8 *Fordham Environmental Law Review* 1, at 7.

⁴ *Trail Smelter (United States v. Canada)* (16 April 1938 and 11 March 1941), (1941) 3 RIAA 1905.

damage to the environment of other States or of areas beyond the limits of national jurisdiction.⁵

This formulation was eventually admitted, in its entirety, as an expression of customary international law in the 1990s.⁶ Despite its customary status, the legal principle of prevention remains abstract and elusive regarding what is required from States, or what they are entitled to, in order to prevent environmental harm.⁷

Until now, prevention has found itself in a paradoxical situation: defined as the ‘golden’⁸ principle of international environmental law, it is considered to be an axiom in environmental law but tends not to be investigated further. This is surprising because principles generally benefit from a ‘high profile’ in international environmental law.⁹ However, prevention has been sidetracked by discussions – among decision-makers, judges and scholars – on precaution¹⁰ or sustainable development,¹¹ which are largely considered to

⁵ Declaration of the United Nations Conference on the Human Environment (Stockholm, 16 June 1972), (1972) 11 ILM 1416, Principle 21.

⁶ *Legality of the Threat or Use of Nuclear Weapons* (Advisory Opinion) (1996) ICJ Rep 226, para 29.

⁷ J Vessey, ‘The Principle of Prevention in International Law’ (1998) 3 *Austrian Review of International and European Law* 181, at 183; J Knox, ‘Myth and Reality of Transboundary Environmental Impact Assessment’ (2002) 96 *American Journal of International Law* 291, at 292.

⁸ N de Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (Oxford University Press 2002) 89; A Kiss and J-P Beurrier, *Droit international de l’environnement* (4th edn, Pedone 2010) 152; United Nations Environment Programme, *Training Manual on International Environmental Law* (UNEP 2006) 32. Similarly, some authors consider prevention to be the ‘cornerstone of international environmental law’: A Kiss and D Shelton, *International Environmental Law* (3rd edn, Transnational Publishers 2004) 113; P Sands and J Peel, *Principles of International Environmental Law* (3rd edn, Cambridge University Press 2012) 191.

⁹ E Scotford, *Environmental Principles and the Evolution of Environmental Law* (Bloomsbury 2017) 5.

¹⁰ In comparison to the limited number of works on prevention, there is a plethora of publications on precaution: see, among many others, the following books: E Fisher, J Jones and R von Schomberg (eds), *Implementing the Precautionary Principle: Perspectives and Prospects* (Edward Elgar 2006); C Foster, *Science and the Precautionary Principle in International Courts and Tribunals: Expert Evidence, Burden of Proof and Finality* (Cambridge University Press 2011); D Freestone and E Hey, *The Precautionary Principle and International Law: The Challenge of Implementation* (Kluwer 1996); J Peel, *The Precautionary Principle in Practice* (Federation Press 2005); J Peel, *Science and Risk Regulation in International Law* (Cambridge University Press 2010); A Trouwborst, *Evolution and Status of the Precautionary Principle in International Law* (Kluwer 2002); A Trouwborst, *Precautionary Rights and Duties of States* (Martinus Nijhoff 2006).

¹¹ The literature on sustainable development is similarly well developed; see e.g. and only referencing books, V Barral, *Le développement durable en droit international: Essai sur les*

be more topical norms. Tellingly, on occasion, the prevention principle is sometimes equated with the precautionary approach¹² or included in the concept of sustainable development.¹³

And yet, a better understanding of the prevention principle is essential to clarifying the duties that States (as well as other subjects of international law) have under customary international law¹⁴ and determining the meaning of provisions appearing in environmental, and other, treaties¹⁵ – interpreted in the light of customary law¹⁶ or preambular

incidences juridiques d'une norme évolutive (Bruylant 2016); A Boyle, *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press 1999); W Lang, *Sustainable Development and International Law* (Graham & Trotman 1995); N Schrijver, 'The Evolution of Sustainable Development in International Law: Inception, Meaning and Status' (2008) 329 *Collected Courses of the Hague Academy of International Law* 215–370; J Verschuuren, *Principles of Environmental Law: The Ideal of Sustainable Development and the Role of Principles of International, European, and National Environmental Law* (Nomos 2003).

¹² On the convergence between precaution and prevention, see e.g. P Birnie, A Boyle and C Redgwell, *International Law and the Environment* (3rd edn, Oxford University Press 2009) 137ff, focusing on an obligation of 'prevention of pollution and environmental harm' that includes a precautionary approach; E Louka, *International Environmental Law: Fairness, Effectiveness, and World Order* (Cambridge University Press 2006) 50, considering the 'principles of preventive action and precaution' together. See also M Fitzmaurice, 'International Protection of the Environment' (2001) 293 *Collected Courses of the Hague Academy of International Law* 9–488, chap V, on 'the elements of [the] preventive approach' but starting with an analysis of precaution.

¹³ P Sands, 'International Law in the Field of Sustainable Development: Emerging Legal Principles', in W Lang (ed), *Sustainable Development and International Law* (Graham & Trotman, Martinus Nijhoff 1995) 53–72, at 62, recognizing Principle 21 and the principle of preventive action as two principles of international law relating to sustainable development; H Trudeau, 'Preventive Action Principle', in J-F Morin and A Orsini A (eds), *Essential Concepts of Global Environmental Governance* (Routledge 2014) 163: 'The principle of preventive action is associated with the concept of sustainable development.' See also the ambiguity in S Palassis, 'Beyond the Global Summits: Reflecting on the Environmental Principles of Sustainable Development' (2011) 22 *Colorado Journal of International Environmental Law and Policy* 41, at 60 and 62, presenting the obligation to prevent as part of the analysis of State practice relative to sustainable development.

¹⁴ See *Trail Smelter*, at 1965; *Nuclear Weapons Advisory Opinion*, para 29; *Gabčíkovo-Nagymaros*, para 140; *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (Judgment) (2010) ICJ Rep 14, para 101; *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, ITLOS No. 17, Advisory Opinion (1 February 2011); ILC, 'Draft Articles on Prevention of Transboundary Harm', 148.

¹⁵ *Gabčíkovo-Nagymaros*, para 140; *Iron Rhine Railway (Belgium v. Netherlands)*, Permanent Court of Arbitration, (2005) 27 RIAA 35, para 59; *Pulp Mills*, para 204; *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, Permanent Court of Arbitration, Partial Award, 18 February 2013, para 452, and Final Award, 20 December 2013, para 111.

¹⁶ Vienna Convention on the Law of Treaties, Vienna, 23 May 1969, in force 27 January 1980, 1155 UNTS 331, Article 31(3)(c).

language.¹⁷ Legal commentary has only undertaken such analysis on a fragmented basis, concentrating on the law applicable to one particular environmental medium, such as the atmosphere and the climate,¹⁸ the marine environment¹⁹ or international watercourses.²⁰ It has, however, remained shy of offering a more comprehensive assessment of prevention under international environmental law as a whole, which is necessary to determine the scope of the general customary duty of prevention and to facilitate a systemic interpretation of treaties.²¹ The clarity brought to prevention will also reverberate on other norms of international environmental law, as a sharper understanding of its applicable scope will provide further clarity on the definitional traits of other norms with which it is often intertwined. Significantly, prevention covers a large number of the measures that are often analysed through the lenses of the much more controversial precautionary norm.²² Also, it has sufficient legal density to translate the sustainable development concept or programme through its substantive and procedural extensions, including the duties to cooperate and to conduct a prior environmental impact assessment (EIA).²³

More generally, the principle is called to play an increasingly important role at a time when environmental degradation is leading to changes to the Earth's systems that are 'unprecedented in human history'.²⁴ The warning has become so widely recognized that nowadays it even sounds banal, despite the strong terms used in major reports and publications. As one reads in the latest *Global Environmental Outlook* published by the United Nations, we are currently

¹⁷ Marrakesh Agreement Establishing the World Trade Organization, 15 April 1994, 1867 UNTS 154, Preamble; *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, Report of the Appellate Body, 12 October 1998, WT/DS58/AB/R, paras 60, 129 and 131; *Whaling in the Antarctic (Australia v. Japan: New Zealand intervening)* (Judgment) (2014) ICJ Rep 226, paras 56 and 58.

¹⁸ P Okowa, *State Responsibility for Transboundary Air Pollution in International Law* (Oxford University Press 2000); R Verheyen, *Climate Change Damage and International Law: Prevention Duties and State Responsibility* (Martinus Nijhoff 2005).

¹⁹ B Smith, *State Responsibility and the Marine Environment: The Rules of Decision* (Clarendon Press 1988).

²⁰ O McIntyre, *Environmental Protection of International Watercourses Under International Law* (Ashgate 2007); SC McCaffrey, *The Law of International Watercourses* (2nd edn, Oxford University Press 2007).

²¹ Vienna Convention on the Law of Treaties, Article 31(3)(c).

²² *Pulp Mills*, separate opinion of Judge Cançado Trindade, para 61, on the close relationship between prevention and precaution.

²³ *Pulp Mills*, para 77.

²⁴ UNEP, *Global Environmental Outlook 5: Environment for the Future We Want. Summary for Policy-Makers* (2012), available at www.unep.org/geo/sites/unep.org/geo/files/documents/geo05_spm_english.pdf (last accessed 19 May 2017), at v.

witnessing ‘irreversible changes to the life-support functions of the planet . . . with significant adverse implications for human well-being’.²⁵ In this context, more clarity on the applicable scope (material, temporal and spatial) of prevention is essential to understand how the principle can drive international legislative processes and be relied upon in international and national dispute-settlement mechanisms. At the same time, this study will bring to light the existence of intrinsic tensions within the international legal system between, on the one hand, a willingness, grounded in the realization that the international community shares common values and interests, to protect the environment – taking the form of prevention in its most advanced manifestation – and, on the other hand, intrinsic limitations relative to the structure of a system originally designed to facilitate inter-State relations, evidenced by the inability of prevention in its advanced form to express its legal effects fully.

THE TRAJECTORY OF PREVENTION

This study provides a systematic and comprehensive assessment of the state of international law in relation to the prevention of environmental harm.²⁶ It seeks to clarify the *ratio legis*, scope and content of the prevention principle by placing it in its wider legal context. The project is based on the premise that the specificity of the prevention principle is best understood when it is put in perspective with the traditional route generally taken by international law in the face of harm: reparation. This work demonstrates that while prevention emerged and developed as an alternative to reparation and found a distinct legal expression based on three definitional traits, the preventive and curative approaches increasingly share common grounds in the concept of compliance control.

To do so, the analysis follows a dual approach: a historical perspective that depicts the evolution of the principle to understand how it achieved its current form and how it could develop further and a conceptual perspective that offers a cartography of the current state of the law pertaining to prevention and identifies its definitional traits. The following remarks explain these two contributions in turn, starting with its historical approach.

This study takes the reader on a journey through international environmental law via the lenses of a concept that has significant influence in the field. The choice of an evolutionary perspective rests on the conviction that the best way to understand the specificity of prevention is to look at its

²⁵ UNEP, *Global Environmental Outlook 5*.

²⁶ The law stated in this study is as of 15 September 2017.

emergence, evolution and consolidation as a distinct norm. International environmental law, as a relatively new branch of law, is fast moving, and its norms (prevention being no exception) evolve rapidly in light of new technological advances, socio-economic objectives and scientific knowledge. If the approach taken by this study might be coined historical, it is not one that divides the field into precisely dated periods,²⁷ nor one that seeks to offer a new, radical perspective on the branch.²⁸ Rather, it concentrates on the paradigm shift in societal values that eventually led to the consecration of an international response unique to environmental damage, taking the form of the principle of prevention.

An evolutionary outlook on prevention leads to a simple, yet important conclusion: the prevention principle in international environmental law has emerged as an alternative, and specialized, norm that operates in contrast with the curative approach that generally drives international law. This comment calls for a brief explanation of what is meant by ‘reparation’ in this context. Reparation is understood broadly as the expression of an *ex post* approach to harm. Concretely, reparation can take different forms, made available under the law of State responsibility.²⁹ However, this analysis conceives of reparation more extensively, not only as specific legal options in the case of an internationally wrongful act but also, more generally, as a reactive response to the occurrence of harm.

Although the study uses reparation to contrast prevention with the rationale against which it emerged, it puts the emphasis on risks, and their anticipation, in opposition to harm and its legal consequences. This is not to say that analysing environmental harm from a curative angle is irrelevant. By contrast, it has actually attracted strong scholarly attention: the large majority of doctrinal works has concentrated on how the law of State responsibility could, or could not, apply to harm to the

²⁷ For a description of the evolution of international environmental law separated into distinct periods, see e.g. PH Sand, ‘The Evolution of International Environmental Law’, in D Bodansky, J Brunnée and E Hey (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press 2007) 29–44, where he divides international environmental law into the three following phases: the traditional era (until 1970), the modern era (1970–92) and the post-modern era (post-Rio). See also E Brown Weiss, ‘The Evolution of International Environmental Law’ (2011) 54 *Japanese Yearbook of International Law* 1, where she makes the same distinctions.

²⁸ See e.g. S Humphreys and Y Otomo, ‘Theorising International Environmental Law’, in A Orford and F Hoffman (eds), *The Oxford Handbook of International Legal Theory* (Oxford University Press 2016) 797–819.

²⁹ ILC, ‘Draft Articles on Responsibility of States for Internationally Wrongful Acts (with Commentaries)’ (2001) *Yearbook of the International Law Commission* (vol II, part 2) 31, Article 34.

environment.³⁰ A certain fascination with the topic is identifiable in the wealth of legal commentary on the *Trail Smelter* arbitration – often considered the backbone of environmental responsibility and the source of prevention.³¹ Similarly, the work of the International Law Commission (ILC) on the topic of ‘liability for injurious consequences of acts not prohibited by international law’ and, more specifically, the difficulties it faced

³⁰ See e.g. and not mentioning the multitude of articles on the topic, P-M Dupuy, *La Responsabilité internationale des Etats pour les dommages d'origine technologique et industrielle* (Pedone 1977); F Francioni and T Scovazzi (eds), *International Responsibility for Environmental Harm* (Graham & Trotman 1991); R Lefebvre, *Transboundary Environmental Interference and the Origin of State Liability* (Kluwer Law International 1996); P Wetterstein and A Rosas (eds), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon Press 1997); M-L Larsson, *The Law of Environmental Damage: Liability and Reparation* (Martinus Nijhoff 1999); P Okowa, *State Responsibility for Transboundary Air Pollution in International Law* (Oxford University Press 2000); E Brans, *Liability for Damage to Public Natural Resources: Standing, Damage and Damage Assessment* (Kluwer Law International 2001); G Cordini and A Postiglione A (eds), *Prevention and Remedying of Environmental Damage: Proceedings of the Workshop on Environmental Law, Ostia Antica, 27 and 28 May 2005* (Bruylant 2005); P Minnerop, C Langenfeld and R Wolfrum (eds), *Environmental Liability in International Law: Towards A Coherent Conception* (Schmidt 2005); M Hinteregger (ed), *Environmental Liability and Ecological Damage in European Law* (Cambridge University Press 2008); H Xue, *Transboundary Damage in International Law* (Cambridge University Press 2009); T Hardman Reis, *Compensation for Environmental Damages Under International Law: The Role of the International Judge* (Kluwer Law International 2011). In relation to the scholarship on prevention, see the following study that analyses it from the perspective of the law of State responsibility: LE Borges, *Les obligations de prévention dans le droit international de l'environnement et ses conséquences dans la responsabilité internationale des Etats* (L'Harmattan 2016), presenting prevention, but from the angle of responsibility and liability.

³¹ A Kuhn, ‘The *Trail Smelter* Arbitration: United States and Canada’ (1941) 35 *American Journal of International Law* 665; JE Read, ‘The *Trail Smelter* Dispute’ (1963) 1 *Canadian Yearbook of International Law* 213; D Dinwoodie, ‘The Politics of International Pollution Control: The *Trail Smelter* Case’ (1972) 27 *International Journal* 219; A Rubin, ‘Pollution by Analogy: The *Trail Smelter* Arbitration’ (1970) 50 *Oregon Law Review* 259; K Michelson, ‘Rereading *Trail Smelter*’ (1993) 31 *Canadian Yearbook of International Law* 219; J Wirth, *Smelter Smoke in North America: The Politics of Transborder Pollution* (University Press of Kansas 2000); R Bratspies and R Miller (eds), *Transboundary Harm in International Law: Lessons from the “Trail Smelter” Arbitration* (Cambridge University Press 2006). Commenting on the importance that the dispute has taken in the international legal imaginary, see A Rubin, ‘Pollution by Analogy: The *Trail Smelter* Arbitration’ (1970) 50 *Oregon Law Review* 259, at 259 noting that ‘[e]very discussion of the general international law relating to pollution starts, and must end, with a mention of the *Trail Smelter* Arbitration between the United States and Canada’. See also E Brown Weiss et al., *International Environmental Law and Policy* (Aspen 1998) 330, who writes that ‘[e]verybody loves *Trail Smelter*’; D French, ‘*Trail Smelter*’, in C Miles and E Borge (eds), *Landmark Cases in Public International Law* (Hart 2018) 153–88, on the creation of the *Trail Smelter* ‘myth’.

in framing the issue have led to a profusion of critical comments.³² However, this study is not primarily concerned with understanding how prevention operates within a curative framework but rather seeks to identify the essence of prevention that lies in its opposition to *ex post* approaches to harm. However, it leaves little doubt that the relationship between prevention and responsibility/liability is a close one; it will, indeed, be by comparing and contrasting prevention to the traditional curative approach that the characteristics of prevention will be laid bare.

THE CONCEPTUALIZATION OF PREVENTION

The historical perspective culminates in a conceptualization of prevention that puts in evidence the definitional elements that characterize prevention. Prevention has outgrown the mere conception of no-harm to reach a more advanced form characterized by three distinct features. The specificity of prevention lies in its rationale, content and spatial scope.

1. **Rationale.** Prevention is an anticipatory principle that seeks to avoid foreseeable risks. It operates distinctively from the curative approach that international law traditionally adopts to respond to wrongful acts and seeks to avoid the creation of harm in the first place.
2. **Content.** Prevention requires that States (and other subjects) exercise due diligence in the face of environmental risks. As such, States are not merely expected to exercise restraint *vis-à-vis* environmental harm but are required to take positive steps to protect the environment.
3. **Spatial Scope.** Prevention seeks to protect the environment irrespective of the location of the occurrence of harm. The principle moved away from the traditional concept of good neighbourliness concerned with

³² See *inter alia* A Boyle, 'State Responsibility and International Liability for Injurious Consequences of Acts Not Prohibited by International Law: A Necessary Distinction?' (1990) 39 *International and Comparative Law Quarterly* 1; G Handl, 'Liability as an Obligation Established by a Primary Rule of International Law: Some Basic Reflections on the International Law Commission's Work' (1985) 16 *Netherlands Yearbook of International Law* 49; J Barboza, 'International Liability for the Injurious Consequences of Acts Not Prohibited by International Law and Protection of the Environment' (1994) 247 *Collected Courses of the Hague Academy of International Law* 291–406; F Orrego Vicuña, 'Responsibility and Liability for Environmental Damage under International Law: Issues and Trends' (1997) 10 *Georgetown International Environmental Law Review* 279; A Pellet, 'Les Articles de la CDI sur la responsabilité de l'État pour fait internationalement illicite. Suite – et fin?' (2002) 48 *Annuaire français de droit international* 1; J Barboza, *The Environment, Risk and Liability in International Law* (Martinus Nijhoff 2011).

preserving territorial sovereignties to recognize environmental protection as an objective in itself.

The combination of the definitional traits of prevention leads to the conclusion that, in its advanced manifestation, prevention takes the form of a general positive obligation to anticipate risks to protect the environment. This inference warrants three preliminary comments. Firstly, the historical and conceptual map offered to the reader makes explicit the topography of the law applicable in the context of environmental protection. By extracting a legal cartography from a complex web of norms, standards and practices that are all manifestations of the principle of prevention, it necessarily leaves aside some asperities, ambiguities and exceptions that surface when the analysis is undertaken at a more micro level. However, as mentioned previously, an understanding of prevention at a more macro level is essential given the increasing role of the customary form of prevention,³³ as well as the density of international law applicable to the environment that facilitates a systemic interpretation of environmental and other treaties.³⁴ Similarly, if the study operates on the basis of the dichotomy between prevention and reparation, it will also reveal that the dynamics between the two rationales are more complex than they might first appear. Indeed, this study will show that they interact in a multiplicity of ways, hence building a dialectic between the two that contributes to their concomitant evolution, and that the boundaries between the two rationales are becoming not only more permeable but also are evolving and extending in new ways.

Secondly, a word ought to be said regarding the trajectory of the norm depicted in this study. The objective is to provide a historical and conceptual map to offer an analytical framework that clarifies the rationale and scope of the principle of prevention. This should not tempt the reader to understand that the evolution of the concept has been linear, with a ‘clear underlying sense of purpose and direction’.³⁵ Indeed, the evolution of the principle of prevention has not been sequential.³⁶ Prevention might have outgrown its initial, more basic expressions as it evolved into its advanced form, but in so

³³ See e.g. *Certain Activities Carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)* and *Construction of a Road in Costa Rica Along the San Juan River (Nicaragua v. Costa Rica)* (Judgment) (2015) ICJ Rep 665, relying mostly on customary obligations and paying little attention to conventional duties.

³⁴ See e.g. *South China Sea Arbitration (The Republic of the Philippines v. The People’s Republic of China)* (Permanent Court of Arbitration), Award on the Merits, 12 July 2016, para 942.

³⁵ B Fassbender and A Peters, ‘Introduction’, in B Fassbender and A Peters (eds), *The Oxford Handbook of the History of International Law* (Oxford University Press 2012) 2.

³⁶ C Redgwell, ‘Transboundary Pollution: Principles, Policy and Practice’, in S Jayakumar et al. (eds), *Transboundary Pollution: Evolving Issues of International Law and Policy* (Edward Elgar 2015) 11–35, at 12.

doing it did not deny the relevance of its past expressions; rather, different, and partial, manifestations of the principle of prevention coexist. The complexity of this evolution is evidenced by an intricate question that divides the scholarship, that is, the relationship between prevention and the prohibition to cause transboundary harm. Indeed, some commentators consider that the two are equivalent,³⁷ while others rely on the assumption that prevention is a broader norm.³⁸ This analysis will clarify this relationship, demonstrating that because prevention finds its origins in the no-harm rule, it still integrates it to varying degrees. However, it will also show that prevention is characterized by its own rationale and scope and thus has evolved beyond the no-harm rule. It can be deemed to be a more modern, or progressive, norm due to its anticipatory rationale and interest in environmental protection per se, in comparison to no-harm, which, by concentrating on the avoidance of wrongful acts with the view to preserving territorial sovereignties, operates on a more traditional basis. Essentially, prevention, although it includes the no-harm rule, is more than no-harm.

A third, and related, comment pertains to prevention being conceptualized as an anticipatory principle of due diligence that aims to protect the environment. It should not hide the fact that prevention manifests in a multiplicity of forms and that only in its most advanced form does prevention fully meet all these criteria. In addition, even when prevention manifests in its most advanced form, this does not necessarily mean that its definitional traits,

³⁷ See e.g. 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) 425–48, at 439; G Handl, 'Transboundary Impacts', in D Bodansky, J Brunnée and E Hey (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press 2007) 531–50, at 539; U Beyerlin and T Marauhn, *International Environmental Law* (Hart 2011) 40–41.

³⁸ See e.g. Kiss and Shelton, *Guide to International Environmental Law*, 113–14: 'The duty of prevention also clearly emerges from the international responsibility not to cause significant damage to the environment extra-territorially, but the preventive principle seeks to avoid harm irrespective of whether or not there are transboundary impacts'; A Trouwborst, 'Prevention, Precaution, Logic and Law: The Relationship between the Precautionary Principle and the Preventive Principle in International Law and Associated Questions' (2009) 2 *Erasmus Law Review* 105, at 111: 'Specifically, the preventative principle should be told apart from the duty of States to avoid transboundary environmental harm'. See also A Kiss and J-P Beurier, *Droit international de l'environnement* (4th edn, Pedone 2010) 152; L Boisson de Chazournes and S Maljean-Dubois, 'Principes du droit international de l'environnement' (2011) *Jurisclasseur Environnement et Développement Durable* (LexisNexis), paras 11–18 ('principe d'utilisation non dommable du territoire') and paras 60–63 ('principe de prévention des dommages'); Sands and Peel, *Principles of International Environmental Law*, 200; Louka, *International Environmental Law*, 50; T Koivurova, *Introduction to International Environmental Law* (Routledge 2014) 109; P-M Dupuy and JE Viñuales, *International Environmental Law* (Cambridge University Press 2015) 55.

such as, for instance, its *erga omnes* character³⁹ or its application in a purely domestic context,⁴⁰ are fully able to express their legal consequences or that they do not come with significant legal uncertainties.

TERMINOLOGICAL CLARIFICATIONS

The terminology used in this study and, most specifically, its title ought to be clarified. The reference to ‘international environmental law’ is used throughout this book as a conceptual help to refer to international law pertaining to the environment: the term is used for convenience to bring under the same heading the questions gravitating around the topic of environmental protection.⁴¹ It should not be understood to refer to a closed legal system but is very much conceived of as being part of international law as a whole.⁴² A short additional remark should be made about why prevention is being referred to as a ‘principle’. Use of the term could be said to reproduce a general trend in environmental law that generously refers to any type of environmental norm as a ‘principle’.⁴³ However, a more specific analysis of the forms of normativity displayed by prevention will be undertaken towards the end of this study to justify this choice. Generally speaking, this study uses the term ‘principle’ with the objective to bring to light the flexibility of the norm in fulfilling different roles in the international legal system. It thus distinguishes itself from studies on transboundary harm that understand prevention merely as a primary rule of obligation and perceives of prevention as a principle in the sense of a guiding norm that drives the entire branch of international environmental law.

STRUCTURE OF THIS STUDY

This book is composed of four sections that take on and develop in detail the ideas outlined in this Introduction. Part I concentrates on the emergence of

³⁹ See Section 11.2.3. ⁴⁰ See Section 8.3.

⁴¹ Such is the position of P Weil, ‘Le droit international en quête de son identité: cours général de droit international public’ (1992) 237 *Collected Courses of the Hague Academy of International Law* 9–370, at 93, in relation to international economic law.

⁴² A Boyle, ‘Relationship between International Environmental Law and Other Branches of International Law’, in D Bodansky, J Brunnée and E Hey (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press 2007) 125–46, at 126–7, noting that international environmental law is a ‘convenient label, which helps us locate what we think we are talking about as lawyers’.

⁴³ On the overwhelming presence of principles in international environmental law, see Section 10.1.

prevention by identifying the intellectual origins of prevention in two complementary approaches to environmental harm (Chapter 1) and presenting the contextual factors that led to a paradigm shift in the 1960s in the international law applicable to natural resources and the environment from reparation to prevention, which was eventually crystallized in 1972 in the form of Stockholm Principle 21 (Chapter 2). Part II provides a detailed survey of the manifestations of prevention in treaty law (Chapter 3), custom codification works (Chapter 4) and case law (Chapter 5) since its formulation in the Stockholm Declaration.⁴⁴ The historical and normative analysis culminates in proposing a conceptualization of prevention in Part III that identifies its specificities expressed in the form of its rationale, content and spatial scope. Specifically, prevention is characterized by its anticipatory rationale (Chapter 6); its nature as a due-diligence obligation, requiring States to act proactively in the face of environmental risks (Chapter 7); and finally, its concern for the protection of the environment per se, irrespective of the location of the harm (Chapter 8). After having analysed the distinctive characteristics of prevention, Chapter 9 situates prevention in its broader legal context by looking at its relationship with other environmental norms. Finally, Part IV analyses the current trends contributing to the further consolidation of the norm in contemporary international law. To do so, it first presents the consequences of prevention's definitional traits for its role and place in the international legal order (Chapter 10). It ends the study by examining the ways in which prevention is evolving in relation to the rationale against which it originally emerged – reparation – and identifies how the curative approach has, to some extent, been absorbed by the preventive logic in the context of non-compliance procedures (Chapter 11).

⁴⁴ Small sections of this and other parts build on already published work: L-A Duvic-Paoli and JE Viñuales, 'Principle 2', in JE Viñuales (ed), *The Rio Declaration on Environment and Development: A Commentary* (Oxford University Press 2015) 107–38' and L-A Duvic-Paoli, 'Prevention and the Anticipation of Risk(s) in International Environmental Law: A Multifaceted Norm', in M Ambrus, R Rayfuse and W Werner (eds), *Conceptions of Risk and the Regulation of Uncertainty in International Law* (Oxford University Press 2017) 141–60.