1 Introduction

That large-scale industrial, agricultural, and technical activities conducted in the territory of one country can cause detrimental effects in the territory of another country or to areas of the global commons is by no means a novel problem in international law. Such transboundary damage has given rise to numerous theories of State responsibility or liability, focusing on remedial rules. But for a long time State practice in this field remained inconsistent and fragmentary. During the past two decades, however, the scope and content of the subject have dramatically expanded, exerting a direct impact on the codification and progressive development of international law in three important fields: (1) the regime of State responsibility; (2) international liability for injurious consequences arising from acts not prohibited by international law; and (3) international environmental law. State responsibility and international liability for injurious consequences have been two of the major issues on the agenda of the International Law Commission (ILC).

In current parlance, transboundary damage is also often referred to as environmental damage, but of a specific type, namely, environmental damage caused by or originating in one State, and affecting the territory of another. There is a vast body of international treaties on various forms of transboundary damage – pollution of international waters, long-range air pollution, land-source damage to the ocean and oil pollution, to give only a few examples. While some of the treaties directly lay down rules on liability and compensation, most contain only general provisions dealing with State responsibility and liability, leaving issues of detailed implementation aside for future action.

Amidst the worldwide demand for increased environmental protection, international jurists, academic and practicing, have again raised the topic of transboundary damage, urging more and stricter rules of

international liability for the protection of the environment. Some contend that strict liability (liability without proof of fault on the part of the actor) should be recognized as a general principle of international law, applicable to all transboundary damage cases, as already accepted by many national laws and as adopted by some international treaties. But actual practice, as witnessed in the aftermath of the Chernobyl nuclear catastrophe, has not sustained such normative claims.

The discrepancy between theory and practice raises basic questions. First of all, as the tragedy of the Chernobyl accident unfolded, international lawyers asked what kind of responsibility a State should bear under international law to prevent and remedy damage caused to other States. If the law is to impose strict liability on States, what legal mechanisms are required? Should these only be specified on an *ad hoc* basis, in particular contexts, by treaty? Or should customary rules be recognized as applicable on a more general basis, by analogy with the general practice of States at the domestic level in the field of civil liability?

In the light of these challenges, this study considers the nature and scope of the current law on international liability for transboundary damage, why it has so evolved, and how it will continue to develop in the future. No doubt the study of international liability rules is only one aspect of the problem of transboundary damage. The development of international environmental law has to a large extent changed the traditional approach of international law towards such issues by focusing on the prevention of damage at its source rather than on compensation for harm caused. Nonetheless transboundary environmental harm continues to occur and issues of liability and responsibility arise. Taking examples and case studies from the industrialized world, one objective of this study is to provide some policy guidance for those States which are bound to face similar problems in the course of their own industrialization.

The study will begin in this chapter with an introduction to basic terms and concepts, particularly the term "transboundary damage," with a view to establishing a meaningful framework for inquiry into international liability rules. Given the huge volume of legal materials and literature on international environmental law, three perspectives are purposely chosen for the study: (1) accidental damage (Chapters 2 and 3); (2) non-accidental damage (Chapters 4 and 5); and (3) damage to the global commons (Chapters 6 and 7). In these chapters, the existing legal regimes on international liability will be reviewed, and relevant legal issues examined. This approach seeks to reveal the underlying general

pattern of legal rules and the basic policy objectives they have been designed to pursue.

Obviously the law does not address damage in the abstract, but only for a specific social purpose. Thus Chapter 8 undertakes a qualitative analysis of liability rules using three criteria – normativity, equity, and efficiency. These criteria serve to determine to what extent international liability regimes will develop and to what extent States will be prepared to accept and be governed by these rules.

On the fundamental issue – the basis of international liability – recent developments, particularly the work of the ILC on State responsibility and international liability for injurious consequences, have given rise to much debate. First, the apparent distinction between State responsibility for wrongful acts and international liability for "lawful acts" (acts not prohibited by international law) challenges standard views of the basis for State responsibility for activities conducted on its territory. The normative claim that strict liability for transboundary damage under customary international law should be imposed on States equally bears on the origin of State responsibility and liability. At the core of the matter lies the fundamental question of the extent of national sovereignty in the conduct of activities within a State's own territory. The basis for imposing liability for damage caused therefrom raises the question of the extent to which perceived sovereign rights to economic development should be restrained. Chapter 9 will focus on these issues.

The scope of the subject: the definition of transboundary damage

Transboundary damage can arise from a wide range of activities which are carried out in one country but inflict adverse effects in the territory of another. Traditionally, however, transboundary damage as a term of art normally refers to border-crossing damage via land, water, or air in dyadic State relations. In international environmental law, such damage is often referred to as international environmental damage or international environmental harm.[1] But since the term "environment"

[1] In comparison with the more general term "environmental damage," the term "transboundary damage" serves to narrow the scope of the relevant damage to that which directly affects more than one State. The definition of environmental damage and equivalent terms varies among different legal instruments. Some definitions are restricted to the objectives of the given treaty and some are rather broad with general reference to the whole area. One jurist defines environmental damage broadly as

has evolved to have such broad connotations, the discussion of transboundary damage in the present study is restricted by four elements: (1) the physical relationship between the activity concerned and the damage caused; (2) human causation; (3) a certain threshold of severity that calls for legal action; and (4) transboundary movement of the harmful effects.[2] Each of these elements is explained below.

The physical relationship between the activity and the damage

Acts that may give rise to transboundary damage for the purposes of this study are those which directly or indirectly involve natural resources, e.g. land, water, air, or the environment in general. In other words, there must be a physical linkage between the activity in question and the damage caused by it. Typically, industrial, agricultural, and technological activities fall into this category. For example, when a nuclear plant is to be built in the border area, placing a vulnerable neighbor at risk, or a border airport creates a nuisance from overflight of a village situated in a neighboring country, the normal conditions of the environment are disturbed or interrupted by the activity.

More dramatic are cases where factories emit noxious fumes and, as a result, residents living on the other side of the border experience increased risk of lung or skin diseases;[3] or where a fault in a border highway construction incidentally causes a landslide that damages the crops of the neighboring farm of another country.[4] Not surprisingly, damage arising from such activities has often been addressed locally or

"damage to: (a) fauna, flora, soil, water, and climatic factors; (b) material assets (including archaeological and cultural heritage); (c) the landscape and environmental amenity; and (d) the interrelationship between the above factors": Philippe Sands, "Liability for Environmental Damage," in Sun Lin and Lal Kurukulasuriya (eds.), *UNEP's New Way Forward: Environmental Law and Sustainable Development* (Nairobi, UNEP, 1995), p. 73, at p. 86, n. 1.

[2] In defining environmental harm and risk, Professor Schachter proposes four conditions which must exist for environmental damage to fall within the definition of transboundary environmental harm. First, the harm must be a result of human activity; secondly, the harm must result from a physical consequence of that human activity; thirdly, there must be transboundary effects; and, fourthly, the harm must be significant or substantial. See O. Schachter, *International Law in Theory and Practice* (Dordrecht, Martinus Nijhoff, 1991), pp. 366–368.

[3] For instance, the *Trail Smelter* arbitration between the US and Canada, reported in RIAA, vol. III (1938), p. 1905; (1941), p. 1938; and discussed in Whiteman, *Digest of International Law* (Washington, US Government Printing Office, 1963–1973), vol. 6, at p. 253.

[4] For example, the incident between the US and Mexico in the 1950s, documented in Whiteman, *Digest*, vol. 6, at p. 260.

regionally,[5] as these incidents generally involve two or three countries in the region. The gist of this first element is that activities in one State directly give rise to harm in a neighboring State or States.

This first definitional element also encompasses the physical consequences of the activity in question. It serves to exclude activities which may cause consequential damage across a border, but not of a "physical" character – for example, expropriation of foreign property, discriminatory trade practices, or currency policies. Such damage may also be grave and material, but it is mainly of an economic or financial nature.[6] When the ILC first embarked on the topic of "international liability for injurious consequences arising out of acts not prohibited by international law," one of the major debates was whether to confine the topic to environmental damage only, or to cover all kinds of transboundary damage, tangible or intangible, especially economic, financial, and trade activities.[7] The ILC eventually reached agreement, with the approval of the General Assembly, not to include economic and financial activities, since damage caused by these activities is of a different character and should be addressed by different rules.[8] This approach is also taken in the present study.

Thus the physical element denotes "bodily, materially or environmentally" harmful consequences. Bodily harm also includes anything injurious to human senses, e.g. nuisance caused by noise, odor, etc.

[5] There is a series of studies on transboundary pollution and environmental damage carried out by the Organization for Economic Cooperation and Development (OECD): OECD, *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977).

[6] This categorization may seem odd to private law lawyers accustomed to the concept of physical harm in tort law or civil law in domestic legal practice, which refers to damage to persons or property, while non-physical damage could include injury to reputation or invasion of privacy. See generally Page Keeton, Robert E. Keeton, Gregory Keating and Lewis D. Sargentich, *Cases and Materials on Tort and Accident Law* (3rd edn., St. Paul, West Publishing Co., 1998). The emphasis in the present context is on the physical form of the damage. Economic loss may be tangible but not physical in form. More importantly, by such classification, certain international economic, financial, and trade activities are treated separately from environmental activities.

[7] See M. B. Akehurst, "International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law," *Netherlands Yearbook of International Law*, vol. 16 (1985), pp. 3–16.

[8] The Working Group set up by the ILC at its thirtieth session recommended: "[the topic] concerns the way in which States use, or manage the use of, their physical environment, either within their own territory or in areas not subject to the sovereignty of any State. [It] concerns also the injurious consequences that such use or management may entail within the territory of other States, or in relation to the citizens and property of other States in areas beyond national jurisdiction": *Yearbook of the ILC* (1978), vol. II (Part Two), pp. 150–151, Doc. A/33/10, Chapter VIII, section C, Annex, para. 13.

The requirement of human causality

The second defining element is the human (i.e. anthropogenic) cause of transboundary damage. Damage that may affect more than one country is not caused by human activities alone. Natural factors, such as earthquakes, floods, volcanos, and hurricanes, can also bring about tremendous losses to human society across a wide area. For such "acts of God," so to speak, liability rules do not apply. A standard *force majeure* clause is usually contained in treaties to exonerate States from legal liability for such damage.[9] In principle, transboundary damage should have "some reasonably proximate causal relation to human conduct."[10]

Furthermore, in accordance with the principles of State responsibility and liability, remediable damage must be connected with a legal right or interest of a State, i.e. an entity with plenary legal personality in international law. In the domestic environmental law field, damage to the public domain could be claimed by the government on behalf of the State community. In international practice, such anthropocentric linkage with the rights and interests of international persons presents little problem in dyadic relations, where the injured State can be easily identified. However, in the case of damage to the global commons – namely, areas situated beyond national jurisdiction and control (e.g. polar areas, the high seas, or outer space) – it has traditionally been thought that no State can claim damage on behalf of the international community under international law if its own legal rights or interests are not directly affected. In recent years, the idea of claims for damage to the global commons has gained force,[11] as communal

[9] However, developments in international environmental law indicate the emergence of higher standards of conduct. Under the Rio Declaration adopted during the 1992 UN Conference on Environment and Development (UN Doc. A/CONF.151/26 (vol. I)), if serious or irreversible damage to the environment may occur as the result of certain human activities, the source State should consider taking precautionary measures, even when the human causation of such damage is not yet scientifically proved. Current global efforts in preventing the depletion of the ozone layer and climate change have promoted such a standard. Although this development does not preclude human cause of damage, it embodies the precautionary approach, calling for earlier preventive measures and setting higher standards of conduct. Further, human activities which directly or indirectly increase the risk of natural catastrophe may not escape liability in the event of damage.

[10] Schachter, *International Law*, p. 366.

[11] See discussion in Chapters 6 and 7. See also M. Glennon, "Has International Law Failed the Elephant?," *American Journal of International Law*, vol. 84 (1990), p. 1, at pp. 28–30; C. Stone, "Should Trees Have Standing? – Toward Legal Rights for Natural Objects," *South California Law Review*, vol. 45 (1972), p. 450; and Schachter, *International Law*, p. 367.

interests in the protection of the commons come to be recognized and expressed in various legal instruments.[12] It is still arguable, however, that all States parties to such instruments have the responsibility to protect the natural environment and the common areas, and correlative rights to see that others do so. In this regard, whether the commons are *res communis* or *res nullius* is no longer relevant, so far as they are open and accessible to all States for exploration and peaceful use under international law.[13] Therefore, transboundary damage does not solely refer to bilateral cases or to claims among a few States, as the word "transboundary" may imply. It also comprises damage to the commons arising from national activities or emanating from sources on national territory.

The threshold criterion

Transboundary damage does not necessarily give rise to international liability in all cases. As has been observed:[14]

> [t]o say that a State has no right to injure the environment of another seems quixotic in the face of the great variety of transborder environmental harms that occur every day. . . . No one expects that all these injurious activities can be eliminated by general legal fiat, but there is little doubt that international legal restraints can be an important part of the response.

International law only tackles those cases where transboundary damage has reached a certain degree of severity. Both in theory and in practice, the need for a threshold criterion has never been doubted, but what that should be has long been debated, along with the dilemma of how strict international liability rules should be. Evidently severity is a factual inquiry which changes with the circumstances of a given case. In

[12] These treaties include the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Moscow, London, and Washington, January 27, 1967), 610 UNTS 205; 6 ILM 386 (1967); the 1959 Antarctic Treaty (Washington, December 1, 1959), 402 UNTS 71; Alexandre C. Kiss (ed.), *Selected Multilateral Treaties in the Field of the Environment* (Nairobi, United Nations Environment Programme, 1983), p. 150; the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (December 5, 1979), 1363 UNTS 21; the UN Convention on the Law of the Sea (Montego Bay, December 10, 1982), 1833 UNTS 396; etc.

[13] The most relevant example is the Antarctic Treaty regime. See Chapter 6.

[14] Schachter, "The Emergence of International Environmental Law," *Journal of International Affairs*, vol. 44 (1991), p. 457; also in Louis Henkin, Richard C. Pugh, Oscar Schachter and Hans Smit, *International Law: Cases and Materials* (3rd edn., St. Paul, West Publishing Co., 1993) at p. 1377.

different international legal instruments on natural resources and the protection of the environment, various terms qualifying the damage such as "serious," "significant," "substantial," and "appreciable" have been adopted.[15] The choice of such a term serves to set the threshold criterion for invoking international liability and to indicate the standard of conduct that State governments deem appropriate. The change of terms in the context of the ILC's early work on non-navigational uses of international watercourses, from "serious" to "appreciable" and finally to "significant," demonstrates the difficulty in deriving generally accepted rules of conduct for riparian States in the uses of international watercourses.[16] To be legally relevant, damage should be at least "greater than the mere nuisance or insignificant harm which is normally tolerated."[17] However, different limits are required for different purposes and in different contexts.

The transboundary movement of harmful effects

On the international plane, transboundary movement of harmful effects implies that more than one State is involved in or affected by the activity in question. The most straightforward example is the use of international rivers and lakes. When a river runs through more than one country, it may be considered an international river,[18] whether it serves as a boundary river or flows successively in different States. If the upstream State, in developing its water resources, either by building dams or by using the water for irrigation, brings about detrimental effects on the downstream State (e.g. the diversion of a large quantity of water

[15] Among others, see the American Law Institute, *Restatement of the Law Third: The Foreign Relations Law of the United States* (St. Paul, American Law Institute Publishers, 1987), vol. 2, § 601, and comment (c), pp. 103–105; the UN Convention on the Law of the Non-Navigational Uses of International Watercourses, adopted by the General Assembly by Resolution 51/229 of May 21, 1997 (UN Doc. A/51/869); Article 2 of the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, adopted by the ILC on second reading in 2001, in Report of the ILC on the Work of its Fifty-Third Session, April 23–June 1 and July 2–August 10, 2001, General Assembly Official Records (GAOR), Fifty-Sixth Session, Supp. No. 10 (A/56/10), p. 370.

[16] Detailed discussions of these concepts will be presented in the following chapters, in particular Chapter 4. See also J. Barboza, "Sixth Report on International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law," March 15, 1990, UN Doc. A/CN.4/428 (Article 2(b) and (e)), reproduced in *Yearbook of the ILC* (1990), vol. II (Part One), p. 83, at pp. 88–89 and 105.

[17] *Ibid.*

[18] There has been a long debate on the definition of an international watercourse. See the work of the ILC on the topic of the law of the non-navigational uses of international watercourses, discussed in Chapter 4.

resulting in serious damage to the crops in the territory of another State, or raising substantially the level of salinity of the water downstream, rendering it undrinkable), it causes transboundary damage. Another example is long-range air pollution. Industrial fumes produced in one State move across the border into a neighboring State, forming "acid rain" that ruins the forests and crops in that other State.

As explained above, the media for the transborder movement of the effects can be water, air, or soil. With national boundaries in mind, the term "transboundary" stresses the element of boundary-crossing in terms of the direct or immediate consequences of the act for which the source State is held responsible. It is the act of boundary-crossing which subjects the consequent damage to international remedy and initiates the application of international rules. Moreover, a "transboundary" harm may result from a transboundary movement across several boundaries that causes detrimental effects in several States. A transboundary act may also take the form of an act which causes harm in and beyond national jurisdiction or control, such as marine pollution of the high seas from land-based sources.

In the event of the transfer of hazardous technology, where there is no tangible movement of harmful substances across a border via the media of water, air, or soil, the activity may nonetheless cause detrimental environmental harm in another State. By definition, transfer of technology falls into a different category since the act, the harmful effects, and the victims are often all within one country. The word "transnational," rather than "transboundary," is usually chosen to describe situations involving the transfer of technology. The nuance lies in the fact that transfer of technology presents more an issue of international trade than a problem of environmental damage. Thus the Hague Conference on Private International Law, in its consideration of the law applicable to civil liability for environmental damage,[19] draws a comparison between the two notions. Referring to "transboundary" cases as "international," it says:[20]

> the "international" case involves the situation where human activity carried on in one country produces damage on the territory of another country. The "transnational" case is where the activity and the physical damage all occur within one country, but nonetheless there is a transnational involvement,

[19] Preliminary Document No. 9 of May 1992 for the attention of the Special Commission of June 1992 on general affairs and policy of the Conference.

[20] See T. Ballarino, "Private International Law Questions and Catastrophic Damage," *Recueil des Cours*, vol. 220 (1990-I), p. 293.

for example, because capital (including technological know-how) has been exported from another country in order to make possible the activity which has caused environmental damage and, presumably, any profits realized from such exported capital will be returned in one way or another to its country of origin.

This implies two separate categories of legal issue. Even though the activity and physical damage may have occurred within one country, the word "transnational" denotes the involvement of another State by way of business transactions surrounding the transfer of the hazardous technology.

But the distinction may be difficult to draw. For example, in the Bhopal catastrophe,[21] despite the fact that there was no transborder movement of either the act, the effects, or the victims, the resulting claims for damage were international in character. Damage was inflicted not only on the population, but also on the environment. The Bhopal incident thus possessed most of the features of a typical case of transboundary damage. At a time when transnational corporations are more and more inclined to move their business to developing countries (among other reasons, to take advantage of more lenient environmental regulations), the exclusion from the category of transboundary damage of cases which involve transboundary movement of capital or technology, rather than the harmful act or effects, is not reflective of reality.

The above four elements – physical nature, human causation, damage criterion, and boundary movement – limit the scope of the term "transboundary damage." By definition, transboundary damage embodies a certain category of environmental damage, including physical injury, loss of life and property, or impairment of the environment, caused by industrial, agricultural, and technical activities conducted by, or in the territory of, one country, but suffered in the territory of another country or in the common areas beyond national jurisdiction and control.

Three perspectives

This study is divided into four Parts, the first three of which will take an empirical approach and address the subject of transboundary harm from three perspectives: accidental damage, non-accidental damage, and damage to the global common areas. The line between accidental damage and non-accidental damage may be blurred in certain cases, and even

[21] See Chapter 2.