

LIABILITY AND REDRESS FOR HUMAN-INDUCED GLOBAL WARMING: TOWARDS AN INTERNATIONAL REGIME

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I. INTRODUCTION

Human-induced climate change will affect the future of the planet and human life in numerous ways. This justifies the need for climate change mitigation as the core principle of any legal regime seeking to address this problem.¹ Yet, whether greenhouse gas emissions are effectively reduced or not, some degree of climate change is unavoidable in the coming years and decades because of past and current greenhouse gas emissions.² As a result, besides

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¹ As noted by the Intergovernmental Panel on Climate Change, most of recent warming is attributed to human activities. See Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis, Summary for Policymakers* 8 (2007) [hereinafter IPCC Working Group I].

² *Id.* at 10.

mitigation, adaptation measures have to be taken.³ Regardless of adaptation measures taken, damages will occur.⁴ It is thus necessary to provide a framework for allocating responsibility for damage that has and will occur. The United Nations Framework Convention on Climate Change (Climate Change Convention) does not mention the need for a liability regime.⁵ However, a comprehensive and effective international legal regime concerning global warming needs to include liability rules. This is in keeping with the call for the development of national and international liability regimes in the Stockholm and Rio declarations.⁶ It also follows from the adoption of liability and redress rules in the context of a number of environmental law treaties.⁷

This Article makes the case for the development of an international liability and redress regime for damages caused by global warming. In doing so, it recognizes that while state responsibility may theoretically be a more effective instrument to address global warming damages, particularly from the point of view of small developing countries, there is little hope that all states would agree to be bound by a regime of state responsibility. The proposal for civil liability is also based on the fact that it has been repeatedly used with regard to other international environmental issues, including such controversial issues as biosafety.⁸ Further, an international civil liability regime is appropriate in the case of a problem like climate change where private economic actors are largely responsible for damages suffered. The proposal for a liability regime is not exclusive of other compensation methods and may be supplemented by state responsibility rules if states can agree on such a framework in the future.

³ Intergovernmental Panel on Climate Change, *Climate Change 2001: Impacts, Adaptation, and Vulnerability, Summary for Policymakers* 6 (2001) [hereinafter IPCC Working Group II].

⁴ *Id.* at 7–8.

⁵ United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107, 31 I.L.M. 849 [hereinafter Climate Change Convention]. For an overall analysis of the climate change regime, see FARHANA YAMIN & JOANNA DEPLEDGE, *THE INTERNATIONAL CLIMATE CHANGE REGIME—A GUIDE TO RULES, INSTITUTIONS AND PROCEDURES* (2004).

⁶ See Declaration of the United Nations Conference on the Human Environment, Principle 22, June 16, 1972, 11 I.L.M. 1416, 1420 (1972); United Nations Conference on Environment and Development: Rio Declaration on Environment and Development, Principle 13, June 14, 1992, 31 I.L.M. 874, 878 (1992) [hereinafter Rio Declaration].

⁷ On existing environmental liability regimes, see *infra* Part II.C.

⁸ See Cartagena Protocol on Biosafety to the Convention on Biological Diversity art. 27, Jan. 20, 2000, 39 I.L.M. 1027, 1039 [hereinafter Cartagena Protocol].

This paper is divided into three sections. Part I outlines some of the issues that arise in the context of the development of a liability regime and the principles that should inform its development. Part II examines the different potential legal responses to global warming damages as well as existing liability rules for other international environmental problems that could serve as a model for developing a liability and redress regime for global warming. Part III provides recommendations for the development of a legal framework in the case of climate change.

II. BASES FOR A LIABILITY REGIME

The threat of global climate change is exceptional. As acknowledged by the Intergovernmental Panel on Climate Change (IPCC), it has “the potential to lead to future large-scale and possibly irreversible changes in Earth systems resulting in impacts at continental and global scales.”⁹

While life may still be possible after significant global warming, it would continue under totally new conditions. In this sense, the threat of climate change is unlike most other environmental problems. Yet climate change can also be analyzed as an environmental issue largely similar to other environmental issues but with a dramatically expanded scope.

Today, the impacts of climate change are increasingly being felt in certain regions of the world, and it is already or will soon be the major environmental threat. Regions found in both the North and the South are immediately at risk of climate change. However, people affected in developing countries are in a much worse position than those in developed countries with regard to adaptation measures they can take. Similarly, a distinction must be made between well-off and poor people within each country as well as between more and less vulnerable regions and countries.

Addressing the negative consequences of climate change through legal measures has become marginally easier, given that at least since 1990, if not earlier, it has become impossible for actors producing goods or services that contribute greenhouse gas emissions to deny that ongoing climate change is mostly human-induced.¹⁰

⁹ IPCC Working Group II, *supra* note 3, at 6.

¹⁰ See generally CLIMATE CHANGE: THE IPCC SCIENTIFIC ASSESSMENT, xxviii–xxix (J.T. Houghton, G.J. Jenkins & J.J. Ephraums eds., 1990).

Nevertheless, while a lot of debate has been going on concerning greenhouse gas emissions, relatively little has been done to address the ongoing consequences of climate change. The present legal framework for addressing climate change thus lacks a liability dimension that is critical to ensuring that people and countries already suffering the negative consequences of climate change are compensated.

Ideally, liability and redress rules should be developed at the international law level because of the nature of the problem being addressed. At the very least, climate change-induced damage must be addressed simultaneously at the national and international levels. Indeed, any damage that occurs in a given country can often be ascribed to past and/or present activities taking place in other parts of the world. Further, any liability regime limited to a national level framework would in most cases deny claimants access to compensation. Indeed, only a few countries and private actors have been and are responsible for most greenhouse gas production or emission. Limiting liability to the national level would deny compensation to all people in countries where no liable entity is found.

A. *Issues and Legal Principles*

This section first reviews in broad terms the various kinds of damages that need to be considered when developing a liability regime and then introduces the main legal principles and doctrines that provide the basis for the development of liability and responsibility frameworks.

1. *Climate change-induced damages.*

Various types of damages can be caused by climate change. First, climate change, which is correctly understood as an environmental issue, can cause immense environmental damage at the local, national, regional, and global levels. This includes numerous impacts, including rising sea levels affecting low-lying countries, interferences with existing weather patterns, and the possible

disruption of oceanic currents like the Gulf Stream that would have major impacts on the climate of whole regions of the world.¹¹

Second, climate change can cause massive social disruption that may lead to complete upheaval in certain countries. For countries that are slated to submerge, this includes the physical disappearance of the basis for that specific culture or civilization. For countries where a large part of the population may be affected, like Bangladesh, it is likely that the consequences of creating millions of environmental refugees would lead to the near or actual collapse of the existing national institutional framework.¹²

Third, climate change can cause disruption at the level of individuals. The kind of damage caused by climate change has the potential to irrevocably affect the realization of a number of human rights for many individuals.¹³ For low-lying countries, this includes, for instance, threats to the realization of the human right to water, food and health whose attainment is directly and indirectly affected by rising sea levels, changing weather patterns, and the loss of productive land and places of dwelling. This individual disruption can also be looked at from the point of view of livelihood. The loss of land and dwellings as well as other related impacts of climate change will disproportionately impact poor people whose subsistence directly depends on access to private resources such as land and common resources such as forests.

This brief overview of the types of damages that can be wrought by climate change highlights the breadth of the challenge that the law must address. The type of damages that need to be considered range from environmental damage and socio-economic considerations, to health risks, human rights, livelihood, and loss of place of habitation.

2. *Legal principles underlying the development of a liability regime.*

In general, liability is related to the occurrence of damages. Traditionally, damage to property was the main trigger for compensation to a property rights holder. Tort and civil liability regimes have over decades developed intricate rules seeking to

¹¹ IPCC Working Group II, *supra* note 3, at 6.

¹² See generally, Susmita Dasgupta et al., *The Impact of Sea Level Rise on Developing Countries: A Comparative Analysis* (World Bank Policy Research Working Paper 4136, 2007).

¹³ IPCC Working Group II, *supra* note 3, at 9.

regulate the consequences of damages caused to the interests of certain rights holders.¹⁴ This has been relatively successful in respect of various types of damages to property as well as compensation for damage already caused.

In the case of environmental issues like climate change, while the basic framework for the development of a liability and redress regime can be the same as in traditional liability regimes, there is a need for further thinking because the traditional conceptual framework for liability is insufficient to address all dimensions of such a broad-ranging environmental issue. A number of principles of sustainable development law thus need to be integrated into the development of liability and redress rules for climate change.

First, in keeping with the focus of the climate change regime on differential treatment and more specifically, common but differentiated responsibilities,¹⁵ a liability regime needs to take into account the different contributions that countries have made and are making to climate change. Units of greenhouse gas emission must thus be ascribed different weights because of past and existing differences in levels of economic and social development and to take into account livelihood concerns that only affect certain countries.

While differential treatment has been central to the development of the existing legal regime on climate change, as illustrated by the fact that developing countries do not take on emission reduction commitments under the Kyoto Protocol,¹⁶ equity has not yet played a major role in debates on adaptation.¹⁷ This should be taken into account because the distribution of climate change impacts is likely to create new vulnerabilities which may in many cases be compounded with existing ones, as in the case of low-lying least developed countries. Similarly, the adaptation debate also needs to include an inter-generational equity dimension since today's emissions will cause harm in the future.

¹⁴ On torts, see, e.g., Richard S. Markovits, *On the Economic Inefficiency of a Liberal-Corrective-Justice-Securing Law of Torts*, 2006 U. ILL. L. REV. 525 (2006). On civil liability, see, e.g., ENVIRONMENTAL DAMAGE IN INTERNATIONAL AND COMPARATIVE LAW: PROBLEMS OF DEFINITION AND VALUATION 17 (Michael Bowman & Alan Boyle eds., 2002).

¹⁵ Rio Declaration, *supra* note 6, at Principle 7.

¹⁶ Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, U.N. Doc. FCCC/CP/1997/L.7/Add.1, 37 I.L.M. 22 (1998) [hereinafter Kyoto Protocol]. See also Philippe Cullet, DIFFERENTIAL TREATMENT IN INTERNATIONAL ENVIRONMENTAL LAW (2003) (concerning the notion of differential treatment in general).

¹⁷ See, e.g., W. Neil Adger, Jami Paavoal & Saleemul Huq, *Toward Justice in Adaptation to Climate Change*, in FAIRNESS IN ADAPTATION TO CLIMATE CHANGE 1 (W. Neil Adger et al. eds., 2006).

Second, a liability regime for climate change needs to comprehensively reflect existing environmental law as it has developed over the past few decades. This is required as a way to ensure compatibility of the liability regime with the Climate Change Convention and the Kyoto Protocol. In addition, since global warming is an all-encompassing environmental problem that has ramifications that go far beyond the strict issue of air pollution and climate, it is necessary to ensure that basic principles of general environmental law are reflected in a liability and redress regime for climate change-related damages.

Among the relevant principles, the precautionary principle stands out. It provides a basis for taking conservation measures even where the extent and scope of environmental harm arising from a given activity has not been conclusively established. The precautionary principle is reflected in the Climate Change Convention under which precautionary measures need to be taken for climate change mitigation and adaptation.¹⁸ The precautionary principle constitutes one of the landmark conceptual developments in environmental law over the past two decades insofar as it provides a novel way to address environmental and social consequences of economic development.¹⁹ It offers a basis for taking action to minimize activities that could damage the environment even when the consequences of those activities are not fully understood.²⁰ It also facilitates the development of liability rules. Indeed, one of the major hurdles in developing liability rules for climate change is that some countries and economic actors may argue that at least until 1990, they cannot be liable for their emissions since the link between greenhouse gas emissions and global warming had not been conclusively established. Similar arguments can be made today by actors who claim, for instance, that the difficulty of distinguishing the impacts of anthropogenic emissions from other emissions should minimize polluter liability. If liability rules are based on the principle of prevention, this could lead to protracted arguments concerning the identity of the liable entity. The precautionary principle provides a clearer basis for allocating liability. Its utility stems from the fact that

¹⁸ Climate Change Convention, *supra* note 5, art. 3, ¶ 3.

¹⁹ See, e.g., Owen McIntyre & Thomas Mosedale, *The Precautionary Principle as a Norm of Customary International Law*, 9 J. ENVTL. L. 221 (1997) (providing an overview of the precautionary principle and its application to international law).

²⁰ Under the Climate Change Convention, as in some other legal instruments, the adoption of precautionary measures is premised on the need for them to be cost effective. See Climate Change Convention, *supra* note 5, art. 3, ¶ 3.

it provides a basis for reversing the burden of proof. It states that economic actors are liable unless they can prove that their activities are environmentally harmless.²¹ This understanding of the precautionary principle has been supported by the European Court of Justice, which has held that certain activities can only be authorized where there are no reasonable scientific doubts as to the absence of negative environmental impacts.²²

Third, a comprehensive climate change-related liability regime needs to reflect the human and socio-economic dimensions of sustainable development. Thus, it is necessary to broaden our view of damage to include socio-economic impacts such as an individual's loss of land, house, or livelihood. This broader view may also include the losses suffered by farmers whose subsistence or cash crops cannot be grown any more, or can only be grown with reduced yields. In this case, it is the most vulnerable individuals, like subsistence farmers in the least developed countries, that will suffer unless they are protected against the potential losses wrought by climate change. In other words, the liability regime needs to take into account the fact that the most vulnerable individuals are also the ones that have the least capacity to adapt. The above considerations concerning livelihoods can also be cast in the language of human rights. Climate change impacts that threaten the realization of individuals' rights to environment, water, food or health should be addressed not only from a socio-economic perspective but also from a human rights perspective.

III. POSSIBLE LEGAL RESPONSES TO GLOBAL WARMING DAMAGE

There is at present no international liability framework directly applicable to climate change-related damages. Nevertheless, the types of issues that surface are not completely new, and states have previously developed a number of national and international responses to address the harms arising from legal or illegal activities.

At the national level, damages to individual property have been handled through the torts system in common law jurisdictions and

²¹ Cf. RODA VERHEYEN, CLIMATE CHANGE DAMAGE AND INTERNATIONAL LAW—PREVENTION DUTIES AND STATE RESPONSIBILITY 75 (2005).

²² Case C-127/02, *Landelijke Vereniging tot Behoud van de Waddenzee v. Staatssecretaris Van Landbouw, Natuurbeheer en Visserij*, 2004 E.C.R. I-7405, 2 C.M.L.R. 31.

through civil liability regimes in civil law jurisdictions. Progressively, international law regimes coordinating civil liability systems have been adopted, particularly in the context of environmental harm. This Part examines the main existing mechanisms and their relevance to climate change. It suggests that state responsibility is relevant because global warming causes significant transboundary damage. However, the unwillingness of states to develop the law of state responsibility sufficiently means that it is unlikely to provide an effective tool to compensate for damages. Among the two main mechanisms for addressing damage caused by private parties, the tort system is found less suitable than civil liability to address the consequences of global warming. The latter is also relatively well developed in international law which makes its development in the context of climate change law an easier proposition.

A. *State Responsibility*

States are responsible for the consequences of breaches of international law.²³ Yet, even though this principle is largely accepted, there is no binding international legal regime concerning state responsibility. States have usually preferred to use other mechanisms to solve their disputes. In the case of the environment, states seem to have been even more reluctant to use the mechanism of state responsibility to address the consequences of environmental damage.²⁴ This is partly linked to states' unwillingness to foster the development of legal principles that might one day be applied against them. As a result, besides a treaty concerning space objects,²⁵ the law on state responsibility is largely under-developed.

At present, the law of state responsibility is governed by a set of articles on the responsibility of states for wrongful acts developed by the International Law Commission (ILC).²⁶ This provides that states

²³ Draft Articles on Responsibility of States for Internationally Wrongful Acts art. 1, International Law Commission, G.A. Res. 56/83, Annex, U.N. Doc. A/56/10(SUPP) (Dec. 12, 2001) [hereinafter Articles on Responsibility of States].

²⁴ See, e.g., ALEXANDRE KISS & DINAH SHELTON, INTERNATIONAL ENVIRONMENTAL LAW 320 (2004).

²⁵ Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187.

²⁶ Articles on Responsibility of States, *supra* note 23.

are responsible for all wrongful acts.²⁷ However, the ILC rules lack specificity when it comes to addressing environmental damage.

The lack of state enthusiasm for the development of a comprehensive state responsibility regime at the international level to address environmental damage, combined with the fact that only states can bring claims, helps explain in part the importance that civil liability regimes have acquired in the field of environmental law. Nevertheless, in the context of climate change, it is necessary to consider both civil liability and state responsibility concurrently. Indeed, the nature of climate change and its numerous ramifications implies that it will never be possible to comprehensively address damage exclusively through civil liability regimes. It thus becomes imperative to strengthen the existing set of rules for state responsibility to make them effectively address climate change.

The need for a renewed focus on state responsibility stems partly from the peculiarities of climate change. First, actual greenhouse gas emitters such as individual citizens driving cars bear a low individual responsibility, and their behavior is linked to economic and environmental policies which they do not control. Second, from the perspective of relations between developed and developing countries, it is clearly unreasonable to expect that citizens of developing countries will be able to successfully sue legal parties in developed countries for climate change-related damage. Even if this can be achieved in certain situations, there will be other cases where claims will have to be mediated by the states and situations where the entity sued will be a developed country as a whole, rather than an entity within that country. In fact, it is probable that a state responsibility system would deliver more effective compensation to developing country citizens.

On the basis of existing rules of state responsibility, it can be argued that state responsibility for climate change damage can be established.²⁸ This legal mechanism needs to be pursued in order to comprehensively address climate change damages.

²⁷ *Id.* art. 1.

²⁸ See generally VERHEYEN, *supra* note 21, at 225–332 (discussing the doctrine of state responsibility and applying the doctrine to the issue of climate change, and providing cases studies in support of the argument that damages should be paid).

B. *Tort and Civil Liability Regimes*

Tort law was developed to address the consequences of an injury arising out of an act or failure to act. This provides an appropriate framework for addressing property rights-related damages and is particularly suitable to compensate injury to economic interests linked to property rights. In the context of environmental damage, tort claims may constitute an effective mechanism to allow an injured rights holder to obtain monetary compensation for the negative consequences of environmental damage.²⁹ Nevertheless, the system needs to be adapted where environmental damage per se is to be compensated. The damage may not be significant enough for one individual party to be willing to take action, or to have legal standing to take action, even if the overall damage is significant.³⁰ A focus on private parties' interests favors the consideration of individual damages. It does not provide the basis for a coherent regulatory framework that can respond to public interest concerns related to the environment or protect areas that are not private property.³¹ Since tort law is primarily focused on the protection of persons and their property, it does not provide an appropriate basis for addressing complex issues linked to environmental damage.³²

Torts can provide a basis for addressing climate change-related damages. Thus, civil actions based on product liability or public nuisance appear to be a viable method of addressing the problem.³³ However, as acknowledged by Grossman, the torts system is not well suited to deal with complex issues like climate change; he therefore calls for a more comprehensive approach to be spearheaded by the legislature.³⁴ This approach is illustrated in *Cambridge Water v. Eastern*

²⁹ See *Martin v. Reynolds Metals Co.*, 342 P.2d 790 (Or. 1959) (holding the defendant liable in trespass for damage caused to plaintiffs by gases and airborne particulates deposited on plaintiffs' land because of the operation of defendant's plant).

³⁰ Michael Anderson, *Transnational Corporations and Environmental Damage: Is Tort Law the Answer?*, 41 WASHBURN L.J. 399, 409 (2002).

³¹ Certain instruments like the Alien Tort Claims Act, 28 U.S.C. § 1350 (1994), can provide partial responses to the limitations of the tort system. See, e.g., Armin Rosencranz & Richard Campbell, *Foreign Environmental and Human Rights Suits Against U.S. Corporations in U.S. Courts*, 18 STAN. ENVTL. L.J. 145 (1999) (analysing cases in which foreign plaintiffs brought suit against U.S. corporations in U.S. courts).

³² See, e.g., Maria Lee, *Civil Liability of the Nuclear Industry*, 12 J. ENVTL. L. 317, 332 (2000).

³³ David A. Grossman, *Warming Up to a Not-So-Radical Idea: Tort-Based Climate Change Litigation*, 28 COLUM. J. ENVTL. L. 1, 3 (2003).

³⁴ *Id.* at 6.

Counties.³⁵ After an extensive discussion of tort principles, the judges ruled that the increasingly complex network of environmental legislation being put in place implies that courts have less of a burden to develop environmental common law.³⁶

The introduction of a civil liability regime offers a more comprehensive approach to addressing the consequences of environmental damage. Indeed, an increasing number of civil and common law countries are adopting environmental civil liability regimes. Similarly, at the international level, states have adopted a number of civil liability regimes that complement the primary rules found in the main environmental law treaty.³⁷

Several reasons support the adoption of civil liability regimes to deal with international environmental problems. Liability and redress provide a mechanism to compensate for harm that has occurred. They can also effectively foster harm prevention. Thus they can contribute to the effective implementation of the “polluter pays principle” by imposing the integration of the environmental and social costs of a given activity.³⁸ Liability rules can also act as an incentive to promote the implementation of existing environmental rules.

Civil liability schemes have traditionally been used to compensate for injury to property and persons. Environmental damage has, over time, become another increasingly acceptable form of damage. Remedies can be awarded either to compensate for the personal injury or property loss arising from the environmental harm, or else to compensate for the environmental harm in itself. Environmental damage can include the costs to clean up a polluted environment; the loss of income from an economic interest in the use or enjoyment of the environment; and the costs of measures undertaken to prevent environmental damage.

Tackling environmental damage includes a number of specific problems. In practice, where damage is not directly linked to property rights or where damage cannot easily be measured in

³⁵ Cambridge Water v. E. Counties Leather, [1994] 2 A.C. 264 (H.L.) (U.K.).

³⁶ *Id.* at 305.

³⁷ On existing environmental civil liability regimes, see *infra* Part II.C.

³⁸ The polluter pays principle is based on the idea that by imposing abatement costs on polluters, they will cut back on pollution in order to minimize costs and enjoy greater profits. See, e.g., XUE HANQIN, TRANSBOUNDARY DAMAGE IN INTERNATIONAL LAW 323 (2003); Sanford E. Gaines, *The Polluter-Pays Principle: From Economic Equity to Environmental Ethos*, 26 TEX. INT'L L.J. 463, 466 (1991).

financial terms, such as in the case of a loss of biodiversity, compensation cannot be conceived only in monetary form. Where no direct economic loss is registered, the restoration of the environment is one possible solution. This is only the case as long as the specific environment can be restored. In cases where damage is irreversible, other solutions must be devised. Possibilities include the creation of a similar environment in a different location or a criminal sanction. These latter two solutions are not optimal from an environmental point of view.

Under traditional civil liability regimes, liability is often triggered through the fault of the person causing damage. In the case of environmental damage, it is widely accepted that strict liability is more appropriate.³⁹ Indeed, existing civil liability regimes usually adopt a strict liability standard.⁴⁰ In the case of particularly dangerous technologies like nuclear energy, it has been proposed that a regime of absolute liability should be introduced, though in practice, absolute liability remains an exception.⁴¹

C. Existing Environmental Civil Liability Regimes

There is currently no civil liability regime that can be directly applied to climate change. However, there are an increasing number of regimes that provide good starting points for the development of a liability and redress regime. Their attractiveness stems from the fact that the model they offer is already well-developed and widely accepted.⁴² This is confirmed by the fact that the International Law Commission, in its recent draft principles on the allocation of loss in

³⁹ See, e.g., Institute of International Law, Responsibility and Liability Under International Law for Environmental Damage art. 5, Sept. 4, 1997, reprinted in 10 GEO. INT'L ENVTL. L. REV. 269 (1998).

⁴⁰ See, e.g., Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal art. 4, Annex III, Dec. 10, 1999, U.N. Doc. UNEP/CHW.5/29 [hereinafter Basel Liability Protocol].

⁴¹ While the 1997 Vienna Convention on Civil Liability for Nuclear Damage provides a regime of "absolute" liability, this is a different use of the term since liability under the Vienna Convention is in fact strict liability, as acts of nature relieve the operator from its liability (art. IV). Int'l Atomic Energy Agency [IAEA], *Vienna Convention on Civil Liability for Nuclear Damage*, IAEA Doc. INFCIRC / 500 (Mar. 20, 1996).

⁴² Note that this assessment is not shared by all writers. Cf. Jutta Brunnée, *Of Sense and Sensibility: Reflections on International Liability Regimes as Tools for Environmental Protection*, 53 INT'L & COMP. L.Q. 351 (2004) (providing a critique of liability regimes as a response to climate change).

the case of transboundary harm arising out of hazardous activities, adopts a framework which mirrors existing civil liability regimes.⁴³

In practice, most recent international environmental treaties that include a liability regime have chosen civil liability as the preferred instrument. This was already the case with the older nuclear regime, as illustrated by the Vienna Convention on Civil Liability for Nuclear Damage.⁴⁴ Examples of recent environmental liability regimes include the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1999 Protocol),⁴⁵ the 2003 joint liability protocol to the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and the 1992 UNCED Convention on the Transboundary Effects of Industrial Accidents,⁴⁶ the Protocol on Environmental Protection to the Antarctic Treaty,⁴⁷ and the proposed liability regime for the Biosafety Protocol.⁴⁸

Despite the variety of fora in which these treaties have been negotiated, they tend to provide broadly similar schemes. First, they usually adopt the principle of strict liability in recognition of the need to channel liability to the promoter or operator of the dangerous activity.⁴⁹ This is accompanied by certain exclusions such as war or acts of God.⁵⁰ In certain cases, the strict liability framework is supplemented by fault-based liability for individuals contributing to

⁴³ See generally Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities, *Report of the International Law Commission, Fifty-sixth session, Supplement No. 10*, ¶ 175 *et seq.*, U.N. Doc. A/59/10(SUPP) (Sept. 16, 2004). See also Caroline Foster, *The ILC Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities: Privatizing Risk?*, 14/3 REV. EUR. COMMUNITY & INT'L ENVTL. L. 265, 266 (2005).

⁴⁴ Vienna Convention on Civil Liability for Nuclear Damage, May 21, 1963, 2 I.L.M. 727.

⁴⁵ Basel Liability Protocol, *supra* note 40.

⁴⁶ Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and to the 1992 Convention on the Transboundary Effects of Industrial Accidents, May 21, 2003, U.N. Doc. MP/WAT/2003/1, CP.TEIA/2003/3.

⁴⁷ Protocol on Environmental Protection to the Antarctic Treaty Liability Arising From Environmental Emergencies, Annex VI, June 14, 2005, 30 I.L.M. 1455.

⁴⁸ On the development of a legal instrument, see, e.g., Convention on Biological Diversity, Open-Ended Ad Hoc Working Group of Legal and Technical Experts on Liability and Redress in the Context of the Cartagena Protocol on Biosafety, *Synthesis of Proposed Operational Texts on Approaches, Options and Issues Identified (Sections IV to XI) Pertaining to Liability and Redress in the Context of Article 27 of the Biosafety Protocol*, UN Doc. UNEP/CBD/BS/WG-L&R/3/2 (Feb. 19–23, 2007), available at <http://www.biodiv.org/doc/meetings/bs/bswglr-03/official/bswglr-03-02-en.pdf>.

⁴⁹ See, e.g., Basel Liability Protocol, *supra* note 40, art. 4.

⁵⁰ *Id.* art. 4, ¶ 5.

the damage through negligence or premeditation.⁵¹ Some treaties provide a possibility for the entity to which the liability is channeled to have recourse against other actors,⁵² while some deny this option to the operator such as in the case of nuclear energy. Liability is also nearly always limited in time even though this limit can extend to several decades.⁵³ The amount that can be obtained is also nearly always finite.⁵⁴ In some cases, such as in the case of nuclear energy treaties, the civil liability regime includes compulsory insurance for nuclear operators as well as a subsidiary liability of the state. In other cases, like in the case of oil pollution, a scheme of strict liability can be strengthened with the introduction of an additional fund financed by a levy on oil importers.⁵⁵ Damage to the environment has usually been taken into account through the consideration of damages to persons and property as well as economic interests. There has, however, been a move towards the inclusion of other elements, such as the costs of preventive measures and the costs of restoration of a degraded environment.⁵⁶ However, even newer treaties do not usually take into account compensation for non-economic components of the environment where measures to restore the environment cannot be taken.⁵⁷

Besides existing international civil liability regimes, the Council of Europe has made a significant contribution by adopting a convention devoted to liability and environmental damage in general (Lugano Convention).⁵⁸ While the Lugano Convention is only a regional instrument, it has some features that could be taken into account in the development of a liability regime for global warming. Its overall objective is to ensure adequate compensation for damage resulting from activities dangerous to the environment. The Lugano

⁵¹ See, e.g., Vienna Convention on Civil Liability for Nuclear Damage, *supra* note 44, art. II, ¶ 2, May 21, 1963, amended by the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, Sept. 12, 1997, 36 I.L.M. 1462 [hereinafter Vienna Convention].

⁵² Basel Liability Protocol, *supra* note 40, art. 8.

⁵³ See, e.g., Vienna Convention, *supra* note 51, art. VI.

⁵⁴ A noticeable exception is the Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment, June 21, 1993, 32 I.L.M. 1228 [hereinafter Lugano Convention].

⁵⁵ See Protocol of 1992 to Amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971, Nov. 27, 1992, 1953 U.N.T.S. 373.

⁵⁶ See, e.g., Vienna Convention, *supra* note 51, art. 1(k).

⁵⁷ See, e.g., R.R. Churchill, *Facilitating (Transnational) Civil Liability Litigation for Environmental Damage by Means of Treaties: Progress, Problems, and Prospects*, 12 Y.B. INT'L ENVTL. L. 3 (2003).

⁵⁸ Lugano Convention, *supra* note 54.

Convention is noteworthy with regard to the definition of damage it proposes which includes not only impairment of the environment—limited to the costs of measures of reinstatement actually undertaken or to be undertaken—but also the costs of preventive measures and any loss or damage caused by preventive measures.⁵⁹ The Convention has not yet come into force even though it was adopted more than ten years ago. This can be partly ascribed to the fact that it goes further than what some states can accept today. This is related, for instance, to the fact that the Convention covers not only transboundary damage but also damage caused within the territory of a member state and that the scope of the Convention is found too wide by some states and industries.⁶⁰ This is largely confirmed by the fact that the 2004 European Union Directive on environmental liability provides a much narrower framework for environmental liability than the Lugano Convention.⁶¹

Overall, liability and redress rules are already well developed in international environmental law.⁶² However, the regimes that exist are sectoral, and no existing international law regime would be directly applicable in the case of climate change. States have indeed privileged the development of specific liability regimes in the context of individual treaties. They have therefore emphasized the development of sectoral liability regimes over general rules for environmental liability, which is consistent with the sectoral manner in which international environmental law has developed over the past several decades. Further, as indicated by the failed attempts to develop comprehensive environmental liability regimes at the regional or international levels, it would be unwise to wait for the development of such an overall regime. As a result, it is necessary to develop a separate regime for climate change-related damage.

While a separate climate change regime seems to be the most appropriate option at this point, this will still be particularly complicated. This is due to the nature of the problem which makes it a difficult issue to address separately from other environmental issues.

⁵⁹ *Id.* art. 2, ¶ 7.

⁶⁰ See, e.g., U.N. Econ & Soc. Council [ECOSOC], *Responsibility and Liability, Conference of the Parties to the Convention on the Transboundary Effects of Industrial Accidents*, at 10, U.N. Doc. CP.TEIA/2000/14/Add.1 (Oct. 16, 2000).

⁶¹ Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on Environmental Liability with Regard to the Prevention and Remedying of Environmental Damage, 2004 O.J. (L 143) 56.

⁶² See, e.g., Churchill, *supra* note 57 (giving a comprehensive review of existing civil liability schemes).

Consequently, any liability and redress regime adopted in the context of climate change will by definition be an umbrella-like regime that will need to be closely coordinated with existing civil liability regimes.

IV. TOWARDS AN INTERNATIONAL LIABILITY REGIME FOR GLOBAL WARMING

The existing international treaties on climate change—the Climate Change Convention and the Kyoto Protocol—constitute at best a first attempt at developing a comprehensive legal regime concerning global warming. Indeed, the Climate Change Convention largely limits itself to addressing certain questions concerning the allocation of emissions among countries with a basic objective of “stabilization” of greenhouse gas concentrations. This would make it difficult to argue that harmful gas concentrations must be reduced under the Climate Change Convention.

Because of the restricted framework within which global warming law is conceived, it cannot be expected that the Climate Change Convention, the Kyoto Protocol or any other protocol adopted under the Climate Change Convention would be sufficient to effectively mitigate global warming so as to avert the need for adaptation even if all countries ratified the relevant treaties.

If the impacts of climate change rapidly increase in coming years, it is possible that developed countries will muster the political will to adopt a stronger international treaty on climate change. However, at present, the best that can be expected is a broader consensus on the need to take some limited action, as with the first commitment period under the Kyoto Protocol.⁶³

Under the present legal framework, there will be a growing need to address the consequences of climate change damage. This was already recognized in the Climate Change Convention that stressed the need for vulnerable countries to undertake adaptation measures.⁶⁴ A Special Climate Change Fund was set up in 2001 to further this goal. However, since these efforts are limited in scope and funding, climate change-related damages will continue to increase.

⁶³ Under the Kyoto Protocol, developed countries committed to reducing their overall emissions of such listed greenhouse gas emissions by at least five per cent below 1990 levels in the period from 2008 to 2012. See Kyoto Protocol, *supra* note 16, art. 3.

⁶⁴ Climate Change Convention, *supra* note 5, art. 4, ¶ 8.

A climate change liability and redress regime is therefore required to address damages that will occur regardless of measures being undertaken to fund adaptation. Any mention of state responsibility or liability has been avoided in the Climate Change Convention and the Kyoto Protocol. This is not an act of omission but of resistance on the part of developed countries. Nevertheless, without liability and redress or state responsibility rules, the climate change regime will remain largely ineffective from the point of view of people and countries suffering from its ongoing impacts.

The liability and redress regime that needs to be adopted should be international and comprehensively address all issues related to climate change. In fact, it is difficult to conceive of addressing liability effectively any other way. This is because most problems that will occur involve an extraterritorial element. In certain situations affected individuals may be able to bring actions against their own government or companies for the damages suffered. This is potentially true for the victims of Hurricane Katrina in New Orleans who may be able to sue in their own jurisdiction.⁶⁵ However, most people affected by global warming are likely to be in more vulnerable, and mostly developing, countries. Since the responsibility for global warming overwhelmingly lies with developed countries and companies incorporated in developed countries, it is unlikely that inhabitants of Tuvalu or Bangladesh would benefit much from a liability regime established only at the national level.

The first hurdle in the development of a liability regime for global warming is the need for certain countries and economic actors to acknowledge their responsibility in causing the phenomenon, something developed countries have refused to do until now. This makes the development of a liability regime for climate change an even more difficult proposition than one for the introduction of genetically modified organisms into the environment, another highly controversial issue.⁶⁶ In the latter case, while it remains unknown whether member states to the Biosafety Protocol will successfully adopt a liability and redress regime, negotiating states at least agreed

⁶⁵ On the potential link between hurricane Katrina and global warming, see, e.g., Pew Center on Global Climate Change, *Katrina and Global Warming*, available at <http://www.pewclimate.org/specialreports/katrina.cfm>.

⁶⁶ Cartagena Protocol, *supra* note 8, art. 27. On the development of liability rules under the Cartagena Protocol, see generally Philippe Cullet, *Liability and Redress for Modern Biotechnology*, 15 Y.B. INT'L ENVTL. L. 165 (2004).

that the issue arose and had to be debated.⁶⁷ In the climate change context, even this preliminary problem has not been solved.

A liability regime for climate change can be largely modeled on existing environmental liability regimes. However, climate change is much more complex than other environmental issues. In fact, it is difficult to conceive of climate change as a distinct environmental issue since it is likely to have significant socio-economic impacts.

A climate change liability regime should cover not only the traditional damage to property but also damages to the natural environment, risks to human health, and socio-economic consequences. The latter are relatively uncommon in liability regimes but need to be included in the case of a multi-faceted issue like climate change. Indeed, it is impossible to dissociate the environmental impacts of climate change from the impacts it has and will have on people's lives. Global warming may displace people from their dwellings and land, and limit access to water and food of sufficient quality.

A successful liability regime additionally needs to address the issue that environmental damage caused by climate change often lacks a link with an individual country, thereby making it more difficult to identify the entity liable to pay damages. Indeed, climate change is the quintessential global environmental problem whose causes and impacts know no legal boundaries. As a result, not only will damage caused by climate change often be unrelated to private property interests, but it will also often be to the global commons. States have generally found it difficult to agree on measures to regulate the use of global commons. Yet, in the case of the exploitation of natural resources such as deep seabed minerals, states have shown that a regulation regime can be adopted.⁶⁸ Further, the regime for the exploitation of deep seabed resources includes the recognition that liability is attached to the failure by any actor undertaking activities in the Area to act in conformity with the rules

⁶⁷ The process of negotiating liability rules was started in 2004. See *Decision BS-I/8, Establishment of an Open-Ended Ad Hoc Working Group of Legal and Technical Experts on Liability and Redress in the Context of the Protocol*, in *Report of the First Meeting of the Conference of the Parties Serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety*, UN Doc. UNEP/CBD/BS/COP-MOP/1/15 (2004).

⁶⁸ United Nations Convention on the Law of the Sea, Oct. 7, 1982, U.N. Doc. A/CONF.62/122, 21 I.L.M. 1261, [hereinafter *Law of the Sea Convention*]; Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, G.A. Res. 48/263, 48th Sess., U.N. Doc. A/RES/48/263 (Aug. 17, 1994).

adopted under the Law of the Sea Convention.⁶⁹ This regime regulating activities in the Area reveals that liability for harm to the global commons is not completely unknown in international law. Yet, the types of damages to global commons that may result from climate change are of an altogether different nature. Indeed, the melting of the ice sheet in the North Pole or the melting of the freshwater stored in Antarctica raise new questions. The type of damages that will be suffered as a consequence of the large-scale melting of ice include rising sea levels (threatening low-lying parts of the world), disruption of global oceanic currents, and changes in the availability of fresh water for countries that rely on rivers fed by glaciers. In other words, there will be damages to global commons like oceanic currents that will in turn wreak havoc on individual countries' climates. This suggests that in the case of climate change, damages cannot be conceived of separately at the local, national and international levels, and reinforces the message that a successful liability and redress regime will by definition have to take into account the multiplicity of impacts that know no boundaries.

Another issue that a liability and redress regime needs to address is the identification of claimants. Climate change again makes this a more difficult task than in the case of other environmental issues. While the responsibility for harmful emissions can be relatively easily attributed to specific countries, the same cannot be said of the damages created by global warming. Indeed, while some of the least developed, low-lying island countries may be wiped out due to rising sea levels—and countries like Bangladesh may face substantial loss of inhabitable and arable land—many other countries, including the wealthiest, may also suffer serious consequences from ongoing climate change. Damages caused to people and the environment should be compensated. However, the fact that responsibility for climate change and capacity to take adaptation measures are heavily skewed suggests that individuals and countries are not facing climate change in a situation of legal equality. Whereas residents of New Orleans could at least hope to recover damages by using their own court systems, most people around the world have to rely on the court systems of other countries

⁶⁹ Law of the Sea Convention, *supra* note 68, art. 139. According to Article 1 of the Convention, the Area means the sea bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction.

or expect their governments to claim damages on their behalf in international dispute settlement mechanisms.

Since a liability regime must not only be effective but also fair and equitable in concordance with the emphasis of the Climate Change Convention on differential treatment, it is necessary to find a way to identify people and countries that should be the primary beneficiaries of the system put in place. One possibility is to focus on the extent of vulnerability, a concept that informs the whole Convention.⁷⁰ This includes the vulnerability of countries like “low-lying and other small island countries, countries with low-lying coastal, arid and semiarid areas or areas liable to floods, drought and desertification, and developing countries with fragile mountainous ecosystems.”⁷¹ It also includes the vulnerability of specific regions within countries that may or may not be classified as vulnerable as a whole. Further, it includes the vulnerability of people who are most at risk of being affected by climate change-related damage. These include people whose dwellings may be submerged, whose subsistence on agriculture may be impaired, and whose access to resources or water is threatened. Overall, it includes all individuals affected by climate change who do not have the capacity to take measures to “adapt” and who should not be expected to pay the price for problems created by a mode of economic development that neither they, nor their forefathers have enjoyed. A good case for using vulnerability as a basis for compensation is established in the IPCC reports: the poorest are the most at risk and the least able to adapt.⁷²

Another intricate issue concerning liability in climate change is the basis for liability. Debates have often centered around the question of causation and the difficulty of linking the emissions to specific impacts on the ground. While this is a relevant issue, it obfuscates the fact that such debates arise only because developed countries have resisted the application of the polluter pays principle to greenhouse gas emissions. Applying the polluter pays principle would establish responsibility for the emissions and provide a basis for liability.⁷³ While this responsibility has not been established in existing legal instruments, existing data and scientific consensus

⁷⁰ Climate Change Convention, *supra* note 5, art. 3, ¶ 2.

⁷¹ Climate Change Convention, *supra* note 5, pmb1.

⁷² IPCC Working Group II, *supra* note 3, at 8.

⁷³ Paul Baer, *Adaptation: Who Pays Whom?*, in FAIRNESS IN ADAPTATION TO CLIMATE CHANGE 131, 132 (W. Neil Adger et al. eds., 2006).

around the mechanisms of climate change indicate that this is merely because of a rearguard political attempt by countries responsible for emissions to avoid liability.

Yet another important issue that needs to be addressed is the fact that concentrating on country-focused liability will increasingly be insufficient and even counter-productive in the future. It is established that there is a clear link between levels of economic development in the North and greenhouse gas emissions over the past few centuries.⁷⁴ Nevertheless, two additional factors need to be taken into account. First, the level of aggregate economic development of a given country may hide immense vulnerabilities of certain sections of the population within the country. This may be true in the United States as well as in Brazil, India, or Bangladesh. Second, the main contributors to climate change may in reality be large companies. This creates a new set of issues because companies are not necessarily linked to a given nation state and can change their nationality. Further, their polluting operations may take place in various countries. Companies providing financial services do not contribute much to climate change directly but have immense impacts on energy policies adopted in various parts of the world through their lending policies. Attributing liability thus requires taking into account a web of factors which goes far beyond identifying a culprit nation state or a legal entity within that state.

V. CONCLUSION

Climate change is probably the most wide-ranging environmental problem faced by humankind today. Climate change is also much more than an environmental issue since it has the potential to completely disrupt and in some cases destroy life in various parts of the world. It is imperative that global greenhouse emissions be dramatically reduced. Since there is a direct correlation between economic development and climate change, the socio-economic dimension of emission reduction needs to be taken into account. Thus, it is neither acceptable for developed countries to claim allocations on the basis of existing emissions nor for developing countries to assert that it is appropriate for them to follow the same

⁷⁴ Philippe Cullet, *Equity and Flexibility Mechanisms in the Climate Change Regime – Conceptual and Practical Issues*, 8 REV. EUR. COMMUNITY & INT'L ENVTL. L. 168, 169 (1999).

development pattern previously followed by developed countries. However, while the threat of climate change does not allow India and China to claim on behalf of their poor populations a right to pollute in the name of economic development, developed countries must invest in renewable energies and provide the new technologies to the rest of the world.

With regard to liability for damages that are already occurring, it is similarly expected that developed countries will bear most of the cost of adaptation measures. Nevertheless, this does not absolve large companies in developing countries from their own liability today or in the future if they follow growth paths that affect global climate. Consequently, the development of a liability regime will be controversial for at least two reasons. First, climate change is in essence an economic development issue which affects all countries. Second, liability for climate change damages will call to account not only rich countries but also rich companies in the North and South. This promises to create new networks and alliances which may thwart all efforts to effectively address global warming. These likely difficulties notwithstanding, it is imperative to develop a liability and redress framework as one of the few effective options to offer compensation to vulnerable people and countries affected by climate change.