Reparations for Environmental Damage in International Law: A Comprehensive Approach for a Sustainable Future

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ABSTRACT: Humanity is currently facing one of the greatest challenges of our era. There is little doubt that we are experiencing an environmental crisis so serious that some believe it may lead to humanity's extinction. This crisis is characterised by the continuous deterioration of the Earth's natural systems to the point that they may collapse. What is worse, this is mostly a crisis of our own making, after centuries of untamed human activities without paying regard to nature have left a trail of destruction of habitats and widespread contamination of the environment on a planetary scale.

Both in society and among scientists, there is an overall agreement that something needs to be done to halt this process. Recent statistics from the United Nations (UN) indicate that halting this trend requires action at an international level. As a problem of planetary proportions, its resolution requires the engagement of the whole international community. With this in mind, states have agreed on multiple international treaties, establishing a plethora of obligations to conserve the environment's functionality. States have elected sustainable development as the chief conservation strategy which allows for human development to the extent that it does not compromise the long-term viability of natural systems. However, recent UN reports suggest that, so far, these efforts have been insufficient to halt the decline of the global environment. This has led states to agree that, besides conservation, it is important to restore the harm already caused to the natural environment. To highlight this new initiative, the United Nations General Assembly (UNGA) recently named the current decade the *United Nations Decade on Ecosystem Restoration (2021–2030).* Its resolution reinforces the need to restore the Earth's degraded ecosystems, bringing light to this important aspect of sustainability. This recently adopted international policy highlights the importance of meaningful reparations for the restoration of environmental damage, allowing the environment to return to a healthy, functional state. When implemented on a global scale, the initiative will contribute to an overall maintenance of the state of global natural systems.

One context where restoration is often overlooked, contributing to the decline of ecosystem health is environmental damage in the inter-state-context. Frequently, actions undertaken within the jurisdiction of one state causes harm to the environment beyond its borders. This damage may result either from the actions of state agents or private parties within their territories. Aside from damage resulting from a few particularly hazardous activities, this is a poorly regulated area of international law. At this stage, the lack of a general binding international agreement regulating the subject results in significant uncertainty. This uncertainty is particularly acute regarding the obligation of states to abstain from causing harm to the natural environment beyond their borders and the consequences of its breach. At this point, scholars are even unsure of the concept of damage in international law, and the extent to which it encompasses the natural environment and the notion of environmental values.

This thesis aims to address this gap in international law and assess the obligation of states to abstain from harming the environment of other states. This research should lead to the clarification of the consequences of breaches to the obligation to prevent damage to the natural environment of other states. It should allow the introduction of an up-to-date set of guidelines on adequate forms of addressing breaches to this obligation in international law.

TABLE OF ABBREVIATIONS

"F4" Panel	Panel of Commissioners responsible for the assessment of the claims included among the fourth part of group "F" of the United Nations Compensation Commission's claims
1969 CLC	1969 Convention on Civil Liability for Oil Pollution Damage (adopted 29 November 1969, into force 19 June 1975) 973 UNTS 3
1992 CLC	International Convention on Civil Liability for Oil Pollution Damage (1992 CLC) (adopted 27 November 1992, into force 30 May 1996) (1997) 1956 UNTS 285
CBD	Convention on Biological Diversity
CoP	Conference of Parties
GEO	Global Environmental Outlook
LRTAP	Convention on Long-Range Transboundary Air Pollution
MoP	Meeting of Parties
SDGs	Sustainable Development Goals

UN	United Nations
UNCC	United Nations Compensation Commission
UNCC GC	United Nations Compensation Commission Governing Council
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNSC	UN Security Council
UNWCED	UN World Commission on Environment and Development

'We all live under the haunting fear that something may corrupt the environment to the point where man joins the dinosaurs as an obsolete form of life'.[1]

Rachel Carson

1. Introduction

Humanity appears to have reached a pivotal point in its history. Our inventive capabilities have allowed us to dramatically alter our planet's landscapes. Throughout history, we have developed technologies which offer unprecedented living standards to a large portion of humankind. Regrettably, this development has imposed what appears to be an unbearable pressure on our planet's environment. There is an international consensus that human activities must be reined in to be made compatible with the long-term viability of global ecosystems. As a result, the international community has agreed to adopt conservation measures to mitigate the environmental impact of our actions, and the extent of our footprint on the environment. Among them, perhaps the most evident is the current goal to control and abate human-induced climate change by reducing our emissions of greenhouse gases and increasing the number of carbon sinks. The long-term goal is to reach net zero

[1] Rachel Carson, *Silent Spring* (Penguin 2000), 187.

emissions, with global emissions of greenhouse gases expected to fall significantly within the foreseeable future.[2] The achievement of the net zero goal is aligned with humanity's sustainable development goals, which take into account human welfare while ensuring environmental conservation and ecosystem management and restoration.[3]

Among the many aspects of sustainability is ecosystem restoration, one of the strategies for the reparation of damaged ecosystems, which aims to restore their functionality. Ecosystem restoration contributes to the solution of many of humanity's most serious environmental problems, among which are the decline in biodiversity and climate change.[4] Reparations for damaged ecosystems is considered a viable and moral alternative in response to environmental damage which contributes to the return of natural systems to their previous state of functionality, and to the achievement of sustainable development objectives.[5]

Historically, the continuous damage to natural systems has been one of the main drivers of environmental decline.[6] One of the contexts in which its consequences appear to be poorly regulated is where one state behaves in a manner which causes damage to the environment beyond

[2] Sam Frankhauser, 'The meaning of net zero and how to get it right' (2022) 12 *Nature Climate Change* 15, 15.
[3] Ibid, 17.
[4] Xing Wu, 'Adapting ecosystem restoration for sustainable development in a changing world' (2023) 4(1) *The Innovation* 1, 1.
[5] Ben Almassi, 'Ecological Restorations as Practices of Moral Repair' (2017) 22(1) *Ethics and the Environment* 19, 20-33.
[6] Andrew S Goudie, *The Human Impact on the Natural Environment: Past, Present, and Future* (2013 Wiley-Blackwell), 4; also, Denise Springett and Michael Redclift, 'Sustainable Development: History and Evolution of the Concept' in Michael Redclift and Denise Springett (eds), *Routledge International Handbook of Sustainable Development* (Routledge 2015); Carson (n 1) generally.

their borders, including within the territory of other states. This damage may result either from acts by its agents or from private activities within a state's jurisdiction.[7] The focus of this thesis will be to reveal the extent to which states are responsible for damage to the environment of other states. Do such events result in an obligation of the state to provide material reparation that contributes to the re-establishment of the environment of other states? What are the consequences of breaches to the preventive obligation, and how is reparation expressed in these cases? The purpose of this thesis is to elucidate these questions, to reveal how international law deals with environmental damage and its reparation, and how these rules contribute to the achievement of a sustainable future for humankind.

To assess the importance of preserving the overall state of the Earth's natural systems, this chapter begins by addressing our current environmental crisis and the efforts of the international community to control and abate further environmental degradation through strategies which contribute to a sustainable future. It will then address reparation as one of the strategies to its achievement. The chapter will then proceed to discuss the originality, significance, and timeliness of the study. After addressing terminology, it will present the aim of this research, the research questions, and outline how these will be pursued.

[7] Benedetto Conforti, 'Do States Really Accept Responsibility for Environmental Damage?' in Francesco Francioni and Tullio Scovazzi (eds), *International Responsibility for Environmental Harm* (Graham & Trotham 1990), 180.

2. Addressing a Global Environmental Crisis

The state of the natural environment is among the most pressing issues of our era. The progressive deterioration of natural systems, commonly referred to as a "nature crisis"[8] or "environmental crisis",[9] has led to significant uneasiness in our society. An analysis of the United Nations Environmental Programme's (UNEP) latest Global Environmental Outlook (GEO) reveals that several of the Earth's ecological systems are currently endangered. The Report indicates "great uncertainty" about the future of humankind, reporting that human impacts on ecosystems have transformed the planet's ecosystems beyond their capacity. It considers the disruption inflicted on our planet's self-regulatory mechanisms to have 'irreversible consequences for global humanity'.[10] Among other issues, the report reveals well-established evidence of the continuous decline in biological diversity[11]; increasing concentrations of CO2 and other greenhouse gases which contribute to climate change[12]; a trend of continuous deforestation[13]; the increasing risk of localised disastrous water scarcity and droughts; and the rapid disappearance of freshwater ecosystems.[14]

Given this level of deterioration of natural systems, some scholars fear

[8] UNEP, 'Five Drivers of the Nature Crisis' (5 Sept 2023), accessed on 15 Nov 2023, available on < https://www.unep.org/news-and-stories/story/five-drivers-nature-crisis#:~:text=The%20planet%20is%20experiencing%20a,reverse%20nature%20loss%20by%202030.>.
[9] UNEP, *Global Environmental Outlook 6* (CUP 2019), 25.
[10] UNEP, *Global Environmental…* (n 9) 4.
[11] Ibid, 145.
[12] Ibid, 108.
[13] Ibid, 202.
[14] Ibid, 236.

we may be heading to a tipping point, beyond which it may become impossible to maintain their stability, with serious impacts on the ability of our planet to sustain life.[15] Given the gravity of these fears, conservation has become one of the most important issues of our era.[16] As a planetary problem, this crisis needs to be addressed globally by the international community of states. This has led states to adopt several international agreements which establish international obligations. This body of rules regarding conservation aims to regulate, prevent, and mitigate the further deterioration of natural environments. At the same time, it aims to repair environmental damage in all its aspects.[17]

2.1. The Development of a Body of International Rules Dedicated to Addressing a Looming Environmental Crisis

States have adopted multiple environmental treaties to address conservation. This body of law has played an important role in developing a regime for environmental protection[18] by adopting sophisticated multilateral treaty regimes. Among them are framework conventions that provide general commitments while allowing for further research. They often involve periodic meetings of parties to update the rules to reflect the best available science.[19] Among these, the best-known is probably the

[15] Gabrielle Walker, 'Climate Change: The Tipping Point of the Iceberg' (2006) 441 *Nature* 802, 802.
[16] Alexandre Kiss and Dinah Shelton, *Guide to International Environmental Law* (BRILL 2007); also, Christopher Sellers, 'Three Eras of Environmental Concern' (2018) 1 *Modern American History* 363, 363-365.
[17] Patricia Birnie *et al*, *International Law and the Environment* (3rd edn, OUP 2009), 9.
[18] Michael Bowman, 'The Effectiveness of International Natural Conservation Agreements' in Helle T Anker and Ellen Margrethe Basse (eds), *Land Use and Nature Protection: Emerging Legal Aspects* (Djoef 2000), 105.
[19] Michael Bowman *et al*, *Lyster's' International Wildlife Law* (CUP 2010), 30.

United Nations Framework Convention on Climate Change (UNFCCC),[20] which set the stage for continuous commitments by states to tackle this serious environmental problem.

These engagements resulted in several international regimes commonly referred to as multilateral environmental agreements. Each of them target specific environmental problems, such as the protection of species, ecosystems, and biomes.[21] Among these are the Vienna Convention for the Protection of the Ozone Layer,[22] the Convention on Biological Diversity (CBD),[23] and the UNFCCC. These treaties create conservation rules that are binding among the parties.[24] Some of these, such as the UNFCCC and the CBD, have been adopted by the overwhelming majority of the international community.[25] In parallel, states have agreed on instruments generally referred to as "soft law" which, although not being binding on signatories, can exert significant influence in environmental policy.[26] Despite the vast majority of environmental obligations being defined in regulatory treaties, rules of international customary law can also have a role in the definition of international obligations related to the

[20] United Nations Framework Convention on Climate Change (adopted 20 January 1994, into force 21 March 1994) UN Doc A/RES/48/189 (UNFCCC).
[21] Birnie *et al* (n 17) 15-17.
[22] Vienna Convention for the Protection of the Ozone Layer (adopted 22 March 1985, into force 22 September 1988) 1513 UNTS 1992 (Vienna Convention).
[23] Convention on Biological Diversity (adopted 5 June 1992, into force 29 December 1993) 1760 UNTS 69 (CBD).
[24] Birnie *et al* (n 17) 15.
[25] All UN member states are parties of the UNFCCC. Refer to < https://treaties.un.org/Pages/ViewDetailsIII.aspx?src=IND&mtdsg_no=XXVII-7&chapter=27&Temp=mtdsg3&clang=_en> accessed on 15 Nov 2023. The CBD has been universally adopted, although it has never been ratified by the United States. Refer to CBD, 'List of Parties', available on < https://www.cbd.int/information/parties.shtml> accessed on 15 Nov 2023.
[26] Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law* (3 edn, CUP 2003), 95.

environment.[27] Finally, judicial decisions are relevant means of revealing and developing the state of international environmental law.[28]

2.2. Sustainable Development as a Strategy to Tackle the Environmental Crisis

There are several views on how to approach environmental protection. Some believe that the gravity of the situation calls for drastic measures on nature protection, the preservationist approach has been generally rejected for its cost on human societies.[29] In contrast, states have opted for a pragmatic approach to conservation, which aims to balance the sacrifice of human welfare goals with conservation.[30]

Unveiled by the *World Conservation Strategy* published in 1980, the contemporary view of environmentalism harmonises environmental protection with human development.[31] It aims to extend the benefits of modern civilisation to all human beings while protecting the long-term stability of natural systems.[32] This compromise led to the emergence, during the early 1980s, of the concept of sustainable development, which allows human development and conservation to walk hand in hand. A few years later, in 1987, the UN World Commission on Environment and

[27] Birnie *et al* (n 17) 9.
[28] Birnie *et al* (n 17) 28.
[29] Birnie *et al* (n 17) 385.
[30] Michael Jacobs, 'Sustainable Development as a Contested Concept' in Andrew Dobson, *Fairness and Futurity: Essays on Environmental Sustainability and Social Justice* (OUP 1999), 8-9.
[31] Michael Redclift, 'Sustainable Development and Global Environmental Change' (1992) 2(1) *Global Environmental Change* 32, 34; also, Daniel B Magraw and Lisa D Hawke, 'Sustainable Development' in Daniel Bodansky *et al* (eds), *Oxford Handbook of International Environmental Law* (OUP 2012), 615.
[32] Pierre-Marie Dupuy and Jorge E. Viñuales, *International Environmental Law* (2nd ed, CUP 2018), 4.

Development (UNWCED),[33] released the report *Our Common Future*,[34] defining sustainable development as the 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.[35]

One of the implications of sustainable development is that damage to the environment is tolerable, insofar as it does not threaten long-term environmental stability, or risk the survival of the current and future generations. The policy aims to achieve controlled economic growth[36] which contains its harmful effects on natural systems.[37]

Sustainable development has played a prominent role in international policy.[38] On 25 September 2015, the United Nations General Assembly (UNGA) elevated sustainability as the cornerstone of its plan to 'strengthen universal peace' and eradicate poverty.[39] Its resolution launched 17 Sustainable Development Goals (SDGs) which aim to protect the environment through poverty eradication.[40]

However, despite the engagement of the international community and the development of a whole field of international law dedicated to the subject, recent reports reveal that the so-called environmental crisis continues to

[33] UNGA Res 38/161 (19 December 1983) UN Doc A/RES/38/161, Para 3.
[34] WCED, *Our Common Future* (OUP 1987); UNGA Res 42/187 (11 December 1987) UN Doc A/RES/42/187.
[35] WCED, *Our Common Future* (n 34) 41.
[36] WCED, *Our Common Future* (n 34) Chairman's Foreword.
[37] Ibid, Para 94.
[38] Dupuy and Viñuales (n 32) 20; also Kiss and Shelton, *Guide to International…* (n 16) 23; Sands and Peel (n 26) 50; UNGA, 'The Future We Want' Res 288/66 (2012) UN Doc A/Res/66/288, Para 20 and 245-91.
[39] UNGA, 'Transforming our world: the 2030 Agenda for Sustainable Development' Res 70/1 (21 October 2015) UN Doc A/RES/10/1, Preamble.
[40] UNWCED, *Our Common Future* (n 34) Para 53.

unfold.[41] The latest edition of UNEP's Global Environmental Outlook (GEO) revealed that, so far, efforts have been insufficient to prevent the continuous decline of the planet's natural systems.[42]

2.3. Reparation by Restoration: Restoration as a Driver of Sustainable Development

As discussed, sustainable development implies that environmental damage is only tolerable to the extent that this does not impair the long-term viability of natural systems. If our activities exceed this threshold, we are expected to restore the environment to ensure its long-term viability.

In the 1980s, the UNWCED Report, "Our Common Future" ("Brundtland Report") delineated the pathway to a sustainable future. The Report expressed the need to address unavoidable environmental damage responsibly. It emphasised in particular the need for states to, as far as possible, ensure the implementation of the necessary measures that contribute to ecosystem regeneration. Given that environmental damage is an essential and inescapable aspect of human development, the report acknowledged the need for environmental restoration to preserve the functionality of global natural systems.[43] The UNWCED report suggested that that environmental damage resulting from economic activity should be followed by reparation through measures that ensure the restoration

[41] Michael Bowman, 'The Definition and Valuation of Environmental Harm: an Overview' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law,* 2.
[42] UNEP, *GEO 6* (n 9) 302-305, 505, 527.
[43] WCED, *Our Common Future* (n 34) Para 49.

of harmed ecosystems[44] such as 'replanting forests, restocking fish, rehabilitating land after mining'.[45]

The purpose of environmental restoration is the return of the natural environment to a state which allows it to re-establish its previous natural processes, allowing it to resume the functions of a healthy ecosystem.[46] Environmental restoration has been defined as 'returning a site to some previous state, with the species richness and diversity and physical, biological, and aesthetic characteristics of that site before human settlement and the accompanying disturbances'.[47] History shows a few examples of successful restoration of degraded ecosystems. One example is the restoration of a vast area of native forests in Rio de Janeiro, Brazil. The project, which took place in the 19th Century, resulted in the consolidation of the Tijuca Forest, one of the world's largest urban forests, which spans over 12,700 square miles.[48] More recently, the US Government has begun to implement the Comprehensive Everglades Restoration Plan (CERP). The Everglades is a vast area of wetlands located in the state of Florida which, for over a century, has been systematically drained for human occupation. The plan, which involves investments of over US$8.3 billion, aims to reverse much of the environmental damage to the Florida wetlands, with the creation of over

[44] Ibid, Para 49.
[45] Ibid, Para 53.
[46] William Throop, 'Introduction' in William Throop (ed), *Environmental Restoration: Ethics, Theory and Practice* (Humanity 2000), 12.
[47] Darrel Morrison, 'Landscape Restoration in Response to Previous Disturbance' in Monica G. Turner (ed), *Landscape Heterogeneity and Disturbance* (Springer 1987), 160.
[48] Jose A Drummond, 'O Jardim Dentro da Máquina' (1988) 2(1) *Estudos Historicos* 276, 277-294.

24,000ha of treatment wetlands.[49]

2.3.1. The UN Decade on Ecosystem Restoration

On 1 March 2019, the UN General Assembly adopted Resolution 73/284, which acknowledged the need to implement a global scale restoration effort. Resolution 73/284 unveiled the *United Nations Decade on Ecosystem Restoration (2021–2030),* to address the need of ecosystem restoration worldwide,[50] scale up prevention, and reverse ecosystem decline,[51] highlighting the importance of ecosystem restoration for sustainable development.[52] Later that same year, the UNGA adopted the Resolution *Harmony With Nature,* calling for the restoration of the 'health and integrity of the Earth's ecosystems'.[53]

The implementation of the UN Decade on Ecosystem Restoration is being led by the United Nations Environmental Programme (UNEP) and the Food and Agriculture Organisation (FAO), which are building a global movement to ramp up restoration. The expectation is to create momentum for restoration on a global scale,[54] helping tackle climate change and other environmental problems. The initiative aims to create a movement to provide finance and other incentives to ecosystem

[49] Fred H Sklar *et al*, 'The Ecological-Societal Underpinnings of Everglades Restoration' (2005) 3(3) *Frontiers in Ecology and the Environment* 2005 161, 161.
[50] UNGA, 'United Nations Decade on Ecosystem Restoration (2021–2030)' Res 73/284 (1 March 2019) UN Doc A/RES/73/284.
[51] Ibid, Para 1.
[52] Ibid, Preamble.
[53] UNGA, 'Harmony with Nature' Res 74/224 (19 December 2019) UN Doc A/RES/74/224, Para 8
[54] UNEP, 'About the UN Decade' available on <https://www.decadeonrestoration.org/about-un-decade> accessed 17 March 2024.

restoration, while also shifting behaviours that lead to nature degradation.[55] For example, one of its projects, the 'Generation Restoration (2023-2025)' aims to restore urban ecosystems and has already channelled hundreds of thousands of Euros for this aim between 1 December 2023 to 30 September 2025.[56]

2.4. Environmental Damage in an Inter-State Context and its Relevance for Achieving Sustainable Development

One often overlooked context of environmental damage is when it occurs in an inter-state or transboundary context. In these cases, acts by one state or carried out within its territory result in damage to the environment on the territory of third states. This may result from acts of state agents or private parties within a state's jurisdiction. This is generally referred to as *transboundary damage* or *transboundary harm.* In the Draft Principles on the Allocation of Loss in the Case of Transboundary Harm, the International Law Commission defined the term as damage 'caused in the territory of or in other places under the jurisdiction or control of a State other than the State of origin, whether or not the States concerned share a common border'.[57]

A fraction of the worldwide damage to ecosystems results from acts of or

[55] UNEP, 'Strategy' available on < https://www.decadeonrestoration.org/strategy> accessed 17 March 2024.
[56] UNEP, 'On World Cities Day, UNEP announces 19 cities to restore nature's rightful place in urban areas' available on < https://www.unep.org/technical-highlight/world-cities-day-unep-announces-19-cities-restore-natures-rightful-place-urban> accessed 17 March 2024.
[57] ILC, '2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities' (2006) II(2) YILC 59 UN Doc A/CN.4/577, Add.1 and Add.2 (Draft Principles on the Allocation of Loss), Article 2(c).

within foreign states. Since the 1960s, scientists have demonstrated that industrial activities can cause environmental damage hundreds of miles away from their source. They found pollution generated in foreign countries to be responsible for the acidification of Scandinavian lakes and forests.[58] The findings led to increased awareness of the potentially serious consequences of industrial activities to the environment of other states.[59] Since then, several environmental agreements have been adopted to prevent this sort of damage, among which is the Convention on Long-Range Transboundary Air Pollution (LRTAP).[60]

One of the most infamous examples of large-scale transboundary damage is the contamination of the territory of several European states as a result of the explosion of one of the reactors at the Chernobyl nuclear power plant in 1986. Despite the lack of claims resulting from the incident, its implications led to a raised awareness of the possibility of transboundary damage as a result of the use of nuclear power. In turn, this led not only to an increased commitment to the safety of nuclear plants and the management of nuclear waste, but also to the strengthening of international regimes providing for reparation of damage which may result from these operations.[61] Shortly after the accident,

[58] Simon Marsden, *Transboundary Environmental Governance in Asia: Practice and Prospects with the UNECE Agreements* (Elgar 2015), 204-206.
[59] Tuomas Kuokkanen, 'The Convention on Long-Range Transboundary Air Pollution' in G Ulfstein (ed), *Making Treaties Work* (CUP 2007), 161.
[60] Convention on Long-Range Transboundary Air Pollution (adopted 13 November 1979, into force 16 March 1982) 1302 UNTS 217 (LRTAP).
[61] Selma Kus, 'International Nuclear Law in the 25 years between Chernobyl and Fukushima and beyond...' (2011) 87 *Nuclear Law Bulletin* 7, 7-22.

states adopted several agreements to avoid similar events in the future.[62]

In some cases, states foreign agents may, willingly or not, enter the territory of a state and cause environmental damage. For example, in 1991, Iraqi troops caused a large-scale environmental disaster in the territory of Kuwait and its neighbours, leading to one of the worst environmental disasters in human history.[63] More recently, the actions of Nicaragua's agents within Costa Rican territory caused damage to an area of protected wetlands, leading to an international dispute between the two states,[64] where Costa Rica sought reparations for damage to its natural environment.[65]

Finally, acts by states or undertaken within their territories may cause damage to the commons, areas with natural resources that are shared by the whole international community. This has led to agreements to conserve common resources, such as the ozone layer[66] and the world's atmosphere and climate stability.[67]

These are contexts where environmental damage and its consequences are poorly regulated, potentially resulting in the poor implementation of

[62] e.g. 1997 Protocol to Amend the 1963 Convention on Civil Liability for Nuclear Damage (adopted 12 September 1997, into force 4 October 2003) (1997 Protocol to the Vienna Convention) 36 ILM 1462.
[63] Samira A S Omar *et al*, 'The Gulf War impact on the Terrestrial Environment of Kuwait: An Overview' in Jay E Austin and Carl E Bruch (eds), *The Environmental Consequences of War* (CUP 2000), 317.
[64] *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v Nicaragua)*, Compensation, Judgment [2018] ICJ Rep 15.
[65] Ibid, Para 42.
[66] Vienna Convention (n 22).
[67] UNFCCC (n 23).

the preventive principle and little to no redress for this damage, compromising the sustainability of our future. This thesis proposes that states should act to address this gap and adopt a clear regulatory body of rules which ensures redress for environmental damage beyond the borders of a state.

3. Originality and Significance of the Study

3.1. The Different Consequences of Transboundary Damage According to its Source

Despite significant efforts of the international community to regulate the problem of transboundary damage through international agreements, this approach has proven insufficient to fully address the problem. The group of treaties dedicated to the regulation of transboundary damage and its reparation is referred to as liability treaties or liability regimes. So far, this strategy has consisted of the adoption of different treaties to address transboundary damage and its consequences according to its sources. However, this group of treaties creates a fragmentary regulation of the subject, with different regimes applicable to damage according to its source. So far, this approach has been insufficient to address all cases of transboundary damage.[68]

Another consequence of the fragmentary treatment of transboundary damage through multiple treaties are gaps where the subject remains

[68] Louise de La Fayette, 'The Concept of Environmental Damage in International Liability Regimes' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law* (OUP 2002), 149; also, Bulent Sozer, 'Liability of the Operators of Nuclear Ships according to Brussels Convention May 25 1962' (1974) 7 *Banka Huk Dergisi* 867, 873-874.

unregulated. In addition, some of these treaties fail to address pure environmental damage, restricting reparation to damage to persons and property. Only a small number of more recent treaties address the consequences of transboundary environmental damage comprehensively.[69] Finally, only one of these agreements[70] provides for state liability for transboundary damage.[71]

The widely different definitions of relevant damage and its consequences in liability agreements[72] have led to uncertainty over the consequences of transboundary damage, contributing to considerable dissent over the meaning of the term "damage".[73] Finally, many of these agreements are not yet in force.[74]

3.2. The Uncertain Consequences of Transboundary Environmental Damage in General

The scholarly literature has historically expressed uncertainty over the consequences of transboundary environmental damage, particularly concerning the obligation of states to compensate for *pure* transboundary environmental damage.[75] In the mid-1980s, states were not yet seen as

[69] Among these are the 1984 Protocol To Amend The International Convention On Civil Liability For Oil Pollution Damage 23 ILM 177 (adopted 25 May 1984, not into force) (1984 Protocol to the 1969 CLC) and the Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (1993 Lugano Convention) (adopted 21 June 1993, not in force) (1993) 32 ILM 1228.
[70] 1972 Convention on International Liability for Damage Caused by Space Objects (adopted 29 March 1972, into force 1 September 1972) 961 UNTS 187 (Space Liability Convention).
[71] Refer to Chapter 5, Conclusion.
[72] Refer to Chapter 5.
[73] Julio Barboza, 'The ILC and Environmental Damage' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 74.
[74] Refer to Chapter 5, generally.
[75] Conforti (n 7) 180.

responsible for this sort of damage.[76] This persisted until at least a decade later, given the scarce literature on the subject.[77] According to Michael Bowman, this lack of relevant literature persisted until not long ago.[78]

Boyle saw 'significant uncertainty' surrounding the responsibility for this harm to the territory of other states or the commons.[79] As recently as 2003, ILC Special Rapporteur Pemmaraju Rao expressed that '[d]amage to the environment per se […] is not considered a fit case for compensation'.[80] More recently, Noah Sachs remarked that compensating for environmental damage in international law was still a problem.[81]

More recently, Pierre-Marie Dupuy and Jorge Vinuales saw states, at least in principle, as responsible for damage to the environment but doubted whether this extends to damage to the environment *itself*.[82] Alexandre Kiss and Dinah Shelton also recently agreed on the responsibility of states, in principle, for this damage, despite conceding

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[76] Alexandre Kiss and Dinah Shelton, 'Systems Analysis of International Law: A Methodological Inquiry' in (1986) 17 *Netherlands Yearbook of International Law* 45, 61-62.
[77] Alan Boyle, 'Remedying Harm to International Common Spaces: Compensation and Other Approaches' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 87-88. Similarly, Alan Boyle, 'Reparation for Environmental Damage in International Law: Some Preliminary Problems' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law* (OUP 2002), 18-19.
[78] Bowman, 'The Definition…' (n 41) 1; also, Michael Bowman, 'Biodiversity, Intrinsic Value, and the Definition of and Valuation of Environmental Harm' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law* (OUP 2002), 60.
[79] Bowman, 'Biodiversity…' (n 78) 91.
[80] ILC, 'First Report on the Legal Regime for Allocation of Loss in Case of Transboundary Harm Arising Out of Hazardous Activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' UN Doc A/CN.4/531 (2003), Para 153 (j) and (k).
[81] Noah Sachs, 'Beyond the Liability Wall: Strengthening Tort Remedies in International Environmental Law' (2008) 837 *UCLA Law Review* 837, 838 and 903.
[82] Pierre-Marie Dupuy and Jorge Vinuales, *International Environmental Law* (CUP 2018), 317 and 323.

that reparation remains a complex subject, especially where damage is irreparable.[83] Despite remarking on the significant progress in the field in the last decades,[84] in the 2018 edition of their *Principles of International Environmental Law*, Phillippe Sands and Jacqueline Peel agreed that 'the rules of international law relating to reparation for environmental damage remain undeveloped'.[85]

Regarding its reparation, scholars have expressed the apparent incompatibility between traditional tort law concepts and the aim to compensate for environmental losses.[86] Authors have remarked on the uncertainty of how to provide redress for environmental damage to the environment of other states. [87] According to Boyle, until recently, there was no agreement on whether and how to perform the reparation of purely environmental damage. He remarked on the disagreement over the material reparation of irreparable damage, and even less agreement on how to assess this sort of damage.[88] Bowman agreed that the problem is expected to pose difficulties to legal systems, both in how to assess the damage and express its reparation.[89]

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[83] Alexandre Kiss and Dinah Shelton, *Guide to International Environmental Law* (BRILL 2007), 19-22.
[84] Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law* (4edn, CUP 2018), 750.
[85] Ibid, 750.
[86] Peter Wetterstein, 'Introduction' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 1; also, Bjorn Sandvik and Satu Suikkari, 'Harm and Reparation in International Treaty Regimes: An Overview' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 70.
[87] Alexandre Kiss and Dinah Shelton, Guide to International Environmental Law (BRILL 2007), 19-22; also, Pierre-Marie Dupuy and Jorge Vinuales, *International Environmental Law* (CUP 2018), 317 and 323.
[88] Alan Boyle, 'Reparation for Environmental…' (n 77) 17.
[89] Michael Bowman, 'Biodiversity, Intrinsic Value…' (n 78) 42-59.

Accordingly, scholars have expressed the need for further research on the field, allowing for its development. Alan Boyle has noted the 'significant scope for creative developments by scholars' and called for research on the subject.[90] Similarly, Phillippe Sands and Richard Stewart have agreed on the need to develop coherent systems of valuation specifically tailored to environmental damage.[91]

3.3. Originality, Relevance and Timeliness of the Research

The uncertainty that surrounds the responsibility of states for environmental damage is remarkable, particularly during the implementation of the UN Decade on Ecosystem Restoration.[92] With states turning their attention to the subject, there should be momentum to discuss restoration in the transboundary context. This aspect, added to the uncertainty over the subject discussed above, should highlight not only the relevance but also the timeliness of the theme.

Accordingly, this thesis aims to investigate the state of international law regarding the responsibility of states and the reparation of environmental damage in international law, with a focus on the responsibility of states for this damage and its reparation. In addition, it will consider losses of environmental values and their reparation in the transboundary context. More importantly, as opposed to a mere formal analysis of the legal

[90] Alan Boyle, 'Reparation for Environmental…' (n 77) 18.
[91] Phillippe Sands and Richard B Stewart, 'Valuation of Environmental Damage – US and International Law Approaches' (1996) 5 (4) *RECIEL* 290, 290 and 295.
[92] UNGA, 'United Nations Decade on Ecosystem Restoration (2021–2030)' Res 73/284 (1 March 2019) UN Doc A/RES/73/284.

consequences of breaches to the preventive obligation, this thesis aims to reveal the options in international law to materially and meaningfully address damage to the environment of other states in a manner that contributes to long-term sustainability.

This research's findings should be a valuable resource for scholars in further developing the field, and a tool for practitioners handling international claims and states negotiating future agreements. As a result, the thesis should contribute to the adequate treatment of environmental damage in a transboundary context. Other researchers may also extend this research into the development of principles and effective mechanisms for the reparation for environmental damage.

4. Terminology

For the sake of consistency, the terminological uncertainties surrounding the concepts of "environment", "damage", "value", and "environmental value" deserve clarification at the early stages of this research.

4.1. The Concept of Environment

Since this investigation focuses on damage to the environment, it is important to first clarify the meaning of the term "environment". The term environment can be elusive.[93] It has been defined as 'the combination of elements whose complex inter-relationships make up the settings, the

[93] Birnie *et al* (n 17) 5; also Sands and Peel (2018) (n 26) 14.

surroundings and the conditions of life of the individual and of society as they are and as they are felt'.[94] The *Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities (Draft Principles on the Allocation of Loss)* do not define the term "environment" directly, instead describing its contents, which includes 'natural resources, both abiotic biotic, such as air, water, soil, fauna and flora and the interaction between the same factors, and the characteristic aspects of the landscape'.[95]

The concept of "environment" has been influenced by different areas of human knowledge, with inputs not only from science, but also economics, philosophy, and religion.[96] Commentaries to Principle 2 of the *Draft Principles on the Allocation of Loss* explain that the concept of environment includes the notion of 'environmental values'.[97] Many scholars agree that environmental values are part of the "environment".[98] Francioni has remarked on the 'general interest of the world community to respect and protect environmental values'.[99] Similarly, Special

[94] Birnie *et al* (n 17) 5.
[95] ILC, Draft Principles on the Allocation of Loss (n 57) Principle 2(b); UNSC Res 687 (3 April 1991) provided the relevance of damage to the "environment" and "natural resources". See also, UNSC Res 687 (3 April 1991) UN Doc S/RES/687(1991), Para 16; also, UNCC Governing Council 'Decision 7: Additional Categories of Claims' (17 March 1992) UN Doc S/AC 26/1991/7/Rev 1 (GC Decision 7), Para 35. The proposal to include *'abiotic and biotic components, including air, water, flora, fauna and the ecosystem formed by their interaction'* and *'features of landscape'* came from the UNEP Working Group of Experts, 'Conclusions by the Working Group of Experts on Liability and Compensation for Environmental Damage Arising from Military Activities' in Alexandre Timoshenko (ed), Liability and Compensation for Environmental Damage: Compilation of Documents (UNEP 1998), Para 31.
[96] Sands and Peel (2018) (n 26) 14.
[97] Draft Principles on the Allocation of Loss (n 57) Principle 2, Commentary 20.
[98] Leslie-Anne Duvic-Paoli, *The Prevention Principle in International Environmental Law* (CUP 2018), 180; also, Barboza, 'The ILC and Environmental Damage…' (n 98) 76.
[99] Francesco Francioni, 'The Private Sector and the Challenge of Implementation' in Pierre-Marie Dupuy and Jorge E Viñuales (eds), *Harnessing Foreign Investment to Promote Environmental Protection: Incentives and Safeguards* (Cambridge University Press 2013), 31.

Rapporteur Julio Barboza has noted that these values form part of the concept of environment.[100]

4.2. Defining Environmental Values

As discussed, "environmental values" may be regarded as a part or an expression of the environment. The term "value" generally denotes that something is relevant or important. In this sense, we often encounter references to the value of life and human dignity. The Oxford English Dictionary lists several definitions of "value", the first of which is 'worth or quality as measured by a standard of equivalence'.[101] But what are "environmental values" specifically?

Unlike material elements of the environment (such as water, air, fauna, flora), environmental values are a human concept which may encompass material elements and/or their expression. However, the meaning of the expression is not self-evident, with no uniform definition of the term in international law or in the legal scholarly literature. As a result, significant disagreement persists over the meaning of the expression. For example, ILC Special Rapporteur Julio Barboza considers environmental values not to be embedded within the environment but within its expressions.[102] In contrast, Special Rapporteur Pemmaraju Rao expressed that some environmental values are inherent within the environment itself, which he

[100] Barboza, 'The ILC and Environmental Damage…' (n 98) 76.
[101] Oxford English Dictionary, 'Value' available on https://www.oed.com/dictionary/value_n?tab=meaning_and_use, accessed 15 January 2024.
[102] Barboza, 'The ILC and Environmental Damage…' (n 98) 76.

refers to as intrinsic value.[103]

The value theory is a branch of philosophy which studies values.[104] Given the importance of environmental values in the definition of environment and the uncertainties surrounding this aspect of the concept, it is vital to precisely define their concept and expression. As a result, this thesis will devote one particular chapter to the subject.[105]

4.3. The Concept of "Damage" and "Environmental Damage"

4.3.1. The Definition of "Damage"

In addition to the previous concepts, the term "damage" is another notion surrounded by ambiguity.[106] Until recently, although it appeared evident that states had an obligation to prevent damage in the territory of other states, it was not clear what "damage" entailed. It was particularly unclear whether their obligation extended to a duty to abstain from causing harm to the environment *itself* of other states.[107] Although states have agreed on several treaties which provide widely varying definitions of "damage" to other states, according to the context in which they arise, these concepts are far from uniform and none of them apply to international law in general. For example, the Convention on the Liability of Operators of Nuclear Ships[108] defines damage as 'the loss of life or personal injury and

[103] ILC, 'Third report on the legal regime for the allocation of loss in case of transboundary harm arising out of hazardous activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' (2006) UN DOC A/CN.4/566, Para 22.
[104] Ibid, Para 22.
[105] Refer to Chapter 2.
[106] Barboza, 'The ILC and Environmental Damage…' (n 98) 74.
[107] Alan Boyle, 'Reparation for Environmental…' (n 77) 19-20.
[108] Convention on the Liability of Operators of Nuclear Ships (adopted 25 May 1962, not in force as of 15 April 2024) (1963) 57 AJIL 268 (Nuclear Ships Convention).

loss or damage to property […]'.[109] This concept of damage restricts its definition to harm to persons or property and does not encompass repercussions on the environment. Similarly, the Convention on Civil Liability for Oil Pollution Damage (1969 CLC)[110] provides a rather circular definition of "damage" as the 'loss or damage […] by contamination resulting from the escape or discharge of oil […]'.[111]

In contrast, the Draft Principles on the Allocation of Loss has a broader definition that encompasses environmental harm, including within the definition of damage the 'loss or damage by impairment of the environment', 'the costs of reasonable measures of reinstatement of the property, or environment, including natural resources', and 'the costs of reasonable response measures'.[112] This lack of consistency among different regulations lead to frequent dissent about the concept of relevant damage for reparation purposes in other contexts of international law. This concept will be further investigated throughout the thesis, through the assessment of treaties, international practice, and precedents on the subject.

4.3.2. The Meaning of the Term "Environmental Damage"

The uncertainty surrounding the concept of "damage" extends to the type of damage that concerns us - "environmental damage".[113] For example,

[109] Ibid, Article I (7)
[110] 1969 Convention on Civil Liability for Oil Pollution Damage (adopted 29 November 1969, into force 19 June 1975) 973 UNTS 3 (1969 CLC)
[111] Ibid, Article 1(4), (7)
[112] ILC, 'Draft Principles on the Allocation of Loss…´ (n 57) Principle 2(a).
[113] Barboza, 'The ILC and Environmental Damage…' (n 98) 74.

the UN Framework Convention on Climate Change defines 'adverse effects on the environment' as 'changes in the physical environment or biota, resulting from climate change, which have significant deleterious effects on the composition, resilience and productivity of natural and managed ecosystems, or on the operation of natural and managed ecosystems or on the operation of socio-economic systems or human health and welfare'.[114] On the other hand, Nagoya Kuala-Lumpur Supplementary Protocol on Liability and Redress (N-KL Supplementary Protocol) defines "damage" as 'an adverse effect on the conservation and sustainable use of biological diversity, taking also into account risks to human health […]'.[115]

Given the plurality of agreements providing different definitions of damage and environmental damage for each context, it is not entirely clear what the expressions mean in international law.[116] Often, the expression "environmental damage" refers to harm to the environment as a whole, or simply to the natural environment. In some cases, it may refer to damage to people or property *as a result of damage* to the environment.[117] As a result, scholars use expressions such as "pure environmental

[114] UNFCCC (n 20) Article 1(1).
[115] Nagoya - Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety (adopted 15 October 2010, into force 5 March 2018) UN Doc UNEP/CBD/BS/COP-MOP/5/17 (N-KL Protocol), Article 2(2)(b).
[116] de La Fayette, 'The Concept of Environmental Damage…' (n 68) 181; also, ILC, 'Report of the International Law Commission on the Work of its 56th Session' (2004) UN Doc A/59/10, 192.
[117] Malgosia Fitzmaurice, 'International Responsibility and Liability' in Daniel Bodansky *et al* (eds), *The Oxford Handbook of International Environmental Law* (OUP 2007), 1013; also Sandvik and Suikkari (n 83) 60-61; also, Draft Principles on the Allocation of Loss (n 57) Principle 3, Para 18 Commentaries.

damage",[118] "damage to the environment *per se",[119]* "pure ecological harm" to specify the reference to damage to the natural environment, regardless of its economic value.[120] This thesis is particularly concerned with the latter aspects of environmental damage. As a result, the term environmental damage will generally refer to damage to the environment, and not be concerned with property or personal losses.

Since environmental values appear to be part of the broad concept of "environment", the term "environmental damage" should encompass damage to these values. Commentaries to the Draft Articles on Responsibility of States for Internationally Wrongful Acts (ARSIWA) confirm that these values are 'no less real and compensable than damage to property'.[121] Similarly, commentaries to the Draft Principles on the Allocation of Loss remarked on the recent trend of 'allowing compensation for loss of "non-use value" of the environment'.[122] As discussed, the meaning of these terms will be investigated in a separate chapter.

This section illustrated that international law lacks a general agreement on the definition of the terms "environment", "environmental values", "damage", and "environmental damage". Accordingly, this thesis will

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[118] Sands and Peel (n 26) 715; also, Alan Boyle, 'Globalising Environmental Liability: The Interplay of National and International Law' (2005) 17 *Journal of Environmental Law* 3, 22; Birnie *et al* (n 17) 231.
[119] de La Fayette, 'The Concept of Environmental Damage…' (n 68) 181; also, Peter Wetterstein, 'A Proprietary or Possessory Interest: A Condition Sine Qua Non for Claiming Damages for Environmental Impairment?' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 30; Pemmaraju S Rao, 'International Liability for Transboundary Harm' (2004) 34 *Envtl. Pol'y & L* 224, 225; Sandvik and Suikkari (n 83) 60.
[120] Malgosia Fitzmaurice, 'International Responsibility…' (n 114) 1013.
[121] ILC, 'Draft Articles on Responsibility of States for Internationally Wrongful Acts' (2001) II(2) *YILC* 31 UN Doc A/56/10 (ARSIWA), Art 36, Commentary 15.
[122] Draft Principles on the Allocation of Loss (n 57) Principle 2, Commentary 18.

reveal the concept of environmental damage which is relevant for the purposes of reparation from treaties, international practice, and precedents.

5. Aim of the Research and Research Questions

This research aims to delve into international law concerning reparation as a pivotal aspect in the resolution of our current environmental crisis. It will concentrate on elucidating the scope of the obligation of states to refrain from harming the environment of foreign states and on the consequences of its breach. Particularly, it will aim to clarify their responsibility for the reparation of this sort of damage, and how to best perform its reparation. This investigation will encompass the legal consequences for states for this damage when it results both from acts by state agents and private parties operating within a state's jurisdiction. The goal is to uncover the mechanisms in international law to address the problem of transboundary damage to the environment, offering comprehensive solutions for this problem, and thereby contributing to long-term sustainability.

The thesis will be divided into two main parts. The first part will explore and clarify the extent of the obligation of states to refrain from causing harm to the environment beyond their national borders. It will also address the consequences for states for breaches of this obligation. In addition, it will aim to elucidate the extent of the term "environmental damage" and its extension to values, through an analysis of the meaning of the terms

“value” and “environmental value”. Finally, it will aim to clarify their protection in international law. The second part of the thesis will investigate international legal frameworks and practice and identify adequate forms of reparation in international law. It will also assess the adequacy of these forms of reparation and how much they contribute to the achievement of sustainable development.

The research questions have the potential to systematise and advance our understanding of state responsibility for this sort of damage and its reparation, as follows:

(1) Does the obligation of states, under international law, to refrain from causing harm to the territory of other states encompass a duty to abstain from damaging their natural environment?

(2) If there is such an obligation, to what extent, if any, are states responsible for its breach, that is, for damage to the environment of other states, notably where this damage is devoid of economic repercussions?

(3) In the light of commentary regarding the compensability of the “environment” and “environmental values”, does the concept of relevant damage that deserves reparation include pure environmental damage, damage to the environment *itself*, and/or damage to “environmental values”? That is, do states have an obligation to provide full reparation for their loss?

(4) To the extent that states are responsible for damage to the environment *itself* and environmental values, do they have an obligation

to provide material reparation that contributes to long-term sustainability, through maintaining the state of global natural systems? In that case, what remedies are most appropriate to achieve this goal?

(5) Considering the intangibility and other aspects of the environment, is it possible to provide financial compensation for this sort of damage?

(6) Drawing on the principles and environmental values which orient international environmental law (IEL), how should reparation be carried out and who or what should be the beneficiary of compensation?

6. Scope and Limitations

6.1. The Preventive Obligation and Its Breaches

This thesis will examine the prevention and reparation of transboundary environmental damage with a focus on pure environmental damage, in order to identify nature's protected values and the extent to which they are safeguarded by the preventive obligation. It will explore the extent to which states are responsible for the reparation of transboundary environmental damage, including damage to environmental values.

This investigation will address both the substantive and procedural dimensions of the issue related to the research questions,[123] focusing on

[123] Substantive law determines legal consequences of an act, that is, the rights and obligations arising from it, whilst procedural law relates to the rules concerning the method to enforce these laws (Walter W Cook, ´"Substance" and "Procedure" in the Conflict of Laws', (1933) 42 *YLJ* 333, 341-343; also, Thurman Arnold, 'The Role of Substantive Law and Procedure in the Legal Process', (1932) 45(4) *HLR* 617, 643; Alfred Kocourek,

redress to the various aspects of environmental damage. Some of the aspects and issues related to the subject that are not central to our discussion have been examined elsewhere and will therefore be addressed only incidentally. Among them are minimum thresholds,[124] the burden of proof, evidentiary issues to establish direct[125] and effective[126] causality, the lack of documentation of baseline conditions in harmed areas,[127] and the role of experts in producing evidence.[128]

6.2. Remediation and Quantification

The complexity of environmental damage often makes scientific assessments central to judicial awards, with courts frequently relying on expert assessments. For instance, in the *Trail Smelter* arbitration, scientific studies were pivotal in defining both the existence and extent of the damage.[129] Similarly, in the *Pulp Mills* case, experts assisted in fact-finding and in determining the nature and scope of the environmental

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'Substance and Procedure' (1941) 10 *FLR* 157, 159; Claire E Jervis, 'Jurisdictional Immunities Revisited: An Analysis of the Procedure Substance Distinction in International Law' (2019) 30 *EJIL* 105, 108; Aurora Carvalho, *Teoria Geral do Direito* (PUC-SP 2009), 278). However, scholars criticise the difference between substantive and procedural as frequently blurry (Cook, 335-337; also, Jervis, 109). Generally, refer to Thomas O Main, 'The Procedural Foundation of Substantive Law' (2010) 4(87) *WULR* 801.

[124] ILC, 'Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, with commentaries' (2001) II(2) YILC 148 (Draft Articles on Prevention), Principle 2, Comm (1) and (2).

[125] Robin R Churchill, 'Facilitating (Transnational) Civil Liability Litigation for Environmental Damage by Means of Treaties: Progress, Problems and Prospects' (2001) 12 *YIEL* 3, 33.

[126] Xue Hanqin, *Transboundary Damage in International La*w (CUP 2003), 86.

[127] Philippe Sands, *Principles of International Environmental Law* (3edn, CUP 2012), 715.

[128] On the role of experts refer to Caroline Foster, *Science and the Precautionary Principle in International Courts and Tribunals: Expert Evidence, Burden of Proof and Finality* (CUP 2011), 77-135.

[129] *Trail Smelter* Arbitration (US v Canada) [1938] RIAA III 1905 (Trail Smelter), 1921 and 1966.

harm.[130]

When addressing transboundary damage, one must first consider what constitutes relevant damage, that is, which elements of the environment, when lost, amount to damage that creates an obligation to provide reparation. This is followed by the choice of manners in which to provide adequate redress for those losses. Finally, once resolving these two problems, only then one must consider the issue of quantifying the extent of the damage and the of interventions needed to completely offset it. Quantification of environmental damage involves identifying the magnitude of the harm and the extent of the measures needed to offset it.

The first two questions, that is, the concept of environmental damage and the means of redress, are central to this thesis, as reflected in its research questions. The issue of valuation, on the other hand, pertains to the domain of sciences and economics and will be addressed only incidentally. Although the thesis may discuss certain challenges associated with environmental valuation, resolving the problem of quantifying environmental damage and redress measures is not among its goals.

The discussion will primarily aim to clarify the obligation of states to abstain from causing transboundary environmental damage and to analyse the consequences of its breaches. The thesis will then examine

[130] *Pulp Mills on the River Uruguay (Argentina v Uruguay)* [2010] ICJ Rep 14, Para 165-168 and 236-266 and Dissenting Opinion of Judges Al Khasawneh and Simma, Para 8-17.

some of the challenges of environmental remediation, critically assessing the extent to which each of its forms (e.g., financial compensation or restitutio in integrum) can address the full range of nature's values. However, as previously stated, valuation will not be the central concern of this analysis.

6.3. Interactions with Other Legal Regimes

The focus of this thesis will be on the law of state responsibility. It should be noted, however, that the law of responsibility of states interacts with other branches of international law which may also be applicable to some aspects of transboundary damage. Among them are human rights, international business and disaster law, climate justice and reparations, and the body of agreements devoted to liability for transboundary damage. For example, human rights law may be applicable where human rights are affected as a result of transboundary damage.

Since transboundary environmental damage may have significant human repercussions,[131] some argue that human rights law may be useful to push for conservation and the improvement of the environment.[132] In some cases, citizens have successfully pursued claims for compensation for environmental damage under human rights obligations. For example, in the *Tatar v Romania* case two citizens directed a claim of violation of their human rights before the ECtHR, as a result of environmental

[131] John H Knox, 'Constructing the Human Right to a Healthy Environment' (2020) 16(79) *ARLSS* 79, 82.
[132] David R Boyd, 'Catalyst for Change' in John H Knox and Ramin Pejan (eds), *The Human Right to a Healthy Environment* (CUP 2018), 17-23. In many cases, human rights violations may be a good argument to prevent environmental damage.

damage which caused negative consequences on their health. The Court found a violation of Article 8 of the ECHR as a result of the accident.[133] Recently, the UN Human Rights Council (UNHRC) agreed on a Resolution recognising the human right to a healthy environment.[134] However, this approach to environmental damage has a marked anthropocentric view, often failing to address the consequences of environmental damage to the environment *itself*. This has been referred to in the literature as damage *through* the environment, where one focuses on the consequences of environmental damage on persons, rather than on the environment itself.[135]

Environmental damage may also intersect with international investment law. Some authors argue that increasing levels of trade and investment are correlated to an increase in environmental degradation on a global scale. International investment law is primarily concerned with protecting investors. Mostly disengaged from environmental concerns,[136] this field is not particularly tailored to protect host states from the environmental degradation resulting from investor operations.[137] As a result, scholars

[133] Dinah L Shelton, 'Decision: Tatar c. Roumanie, App. No. 67021/01...European Court of Human Rights, Jan. 27, 2009' (2010) 104 *AJIL* 247, 248-249.
[134] UNHRC Res 48/13 (2021) UN Doc A/HRC/RES/48/13, Para 1.
[135] Louise de La Fayette, 'The Concept of Environmental Damage in International Liability Regimes' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law* (OUP 2002), 149.
[136] Kate Miles, *The Origins of International Investment Law* (CUP 2013), 130-132.
[137] Ibid, 133-135. In some cases, indigenous peoples have turned to domestic courts in the investor's home state (e.g. *BHP Lawsuit (Ok Tedi Mine, Papua New Guinea)*, where Papua-New Guinean citizens sued BHP in Australia, which led to an out-of-court settlement of AU$ 40million in compensation. See Miles (n 136) 135-137; also, Stuart Kirsch, 'Cleaning Up Ok Tedi: Settlement Favors Yonggom People' (1996) 4(1) JII, available on < https://quod.lib.umich.edu/j/jii/4750978.0004.104?view=text;rgn=main> accessed 12 December 2024). However, in the 1990s, local communities sought redress against Texaco for environmental damage in the United States, with the cases dismissed (Miles (n 136) 140-144).

point to the difficulties in obtaining compensation from parent companies for environmental damage in third states.[138]

International disaster law may also concern our subject but is primarily devoted to cooperation for immediate disaster response,[139] without focusing on *ex-post* reparation for wrongful acts.[140] Finally, this research may interact with the literature on climate justice and reparations, which challenges the traditional view of responsibility and reparations, to focus on intergenerational equity and historical responsibility for damage to atmosphere and its consequences.[141]

As seen these interactions with other legal fields differ from the approach of the law of state responsibility. Human rights law allows individual claims which may complement the traditionally bilateral state model. Investment law focuses on protecting investors and may constrain the regulatory power of states. More importantly, the climate justice literature challenges the traditional responsibility dynamic, to recall the historical and collective responsibility for environmental damage. While these should be

[138] Miles (n 136) 137.
[139] ILC, 'Draft Articles on the Protection of Persons in the Event of Disasters' UN Doc A/71/10, Preamble and Article 2-15; also, Giulio Bartolini, 'A Taxonomy of Disasters in International Law' in Flavia Zorzi Giustiniani et al (eds), *Routledge Handbook of Human Rights and Disasters* (Routledge 2018), 14.
[140] ILC, 'Draft Articles on the Protection…' (n 139) Article 18.
[141] Brian Tokar, 'On the Evolution and Continuing Development of the Climate Justice Movement' in Kerin Helwig et al (eds) *Routledge Handbook of Climate Justice* (Routledge 2019), 13-21; also, Daniel Bodansky *et al, International Climate Change Law* (OUP 2017), 51-55. It is worth noting that although the Paris Agreement refers to loss and damage associated with climate change (Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) UNTS 54113, Art 8), the CoP Report provides that 'Article 8 of the Agreement does not involve or provide a basis for any liability or compensation' (UNFCCC CoP, 'Report of the Conference of the Parties' (2015) UN Doc FCCC/CP/2015/10/Add.1, Para 51); also, Meinhard Doelle, 'The Paris Agreement: Historic Breakthrough or High Stakes Experiment?' (2016) 6 *Climate Law* 1, 12-13).

acknowledged, unlike these fields of law which are markedly anthropocentric, this thesis supports the environment's intrinsic value, therefore adopting an ecocentric approach to the consequence of damage to the environment *itself*. Where mitigation and remediation to the environment are concerned the law of state responsibility is the proper framework to address breaches of the preventive obligation.[142] This will lead to a focus on the protection and remediation of the environment *in and for itself*, for its own sake, and not for the sake of humans. For this reason, the thesis will focus discussions upon environmental ethics, international environmental law, and the law of responsibility of states.

7. Methodology

This research will use a doctrinal legal method to address our questions. It will review the primary sources of law, state practice, international precedents, and the scholarly literature to identify and critically assess the relevant rules applicable to the subject being investigated. Among these, it will review the work of the International Law Commission relevant treaties, decisions of treaty bodies, and the UN International Compensation Commission. Secondary sources will be used to reveal and interpret primary rules and their inter-relationship to reveal the current state of the law in the subject matter. As typically happens in international environmental law, this thesis will also have an element of inter-

[142] Leslie-Anne Duvic-Paoli, *The Prevention Principle in International Environmental Law* (CUP 2018), 327-330.

disciplinarity, as a result of its references to scientific research and the ethical element of the discipline.[143]

This thesis will critically assess the available solutions for the problem under investigation,[144] to reveal the available practices which seem most likely to be compatible with primary obligations, the achievement of sustainable development, and nature's values.[145]

8. Thesis Approach

This thesis consists of two parts. Part I (Chapters 2-4) will aim to establish the terminology, meaning, and recognition of environmental values in international law, the extent and status of the preventive obligation, and the responsibility of states for its breaches. Chapter 2 will begin by investigating the concept of environmental values, their expression, and recognition in international law. Chapter 3 will discuss the preventive obligation and its applicability to pure environmental damage. Chapter 4 will assess the consequences of the breach of the latter obligation, and the redress for transboundary damage to the environment and its values.

Part II (Chapters 5 to 7) will assess how the international legal system treats transboundary environmental damage. Chapter 5 will address international treaties which define damage and discipline its reparation. Chapter 6 will assess the United Nations Compensation Commission

[143] Elisabeth Fisher et al, 'Maturity and Methodology: Starting a Debate about Environmental Law Scholarship', (2009) 21 (2) *Journal of Environmental Law* 213, 215.
[144] Felicity Bell, 'Empirical research in law' (2016) 25(2) *Griffith Law Review* 262, 268.
[145] cf Terry Hutchinson and Nigel Duncan, 'Defining and Describing What We Do: Doctrinal Legal Research' (2012) 17 *Deakin Law Review* 83, 101.

(UNCC), which handled environmental claims resulting from the Gulf War. Addressing a large number of environmental claims, the commission faced conceptual and practical issues relevant to this investigation. Following the publication of its last awards, international law witnessed significant developments in the area. Chapter 7 will consider these latest developments, particularly from the last two decades.

Finally, Chapter 8 will discuss the findings and propose a set of principles regarding transboundary damage to the environment and its reparation. It will also contain a set of guidelines for tackling the problem in a manner that appears to be most conducive to sustainability and compatible with environmental values.

PART I – THE CONCEPT AND PROTECTION OF ENVIRONMENTAL VALUES, THE PREVENTIVE OBLIGATION, AND THE CONSEQUENCES FOR ITS BREACH

> *'A dogmatic belief in objective value is necessary to the very idea of a rule which is not tyranny or an obedience which is not slavery'.*[1]
> *C. S. Lewis*

Any discussion about preventing harm to an entity or a valuable asset should be preceded by an underlying precise knowledge of that which we intend to protect. Equally, the precise definition of the underlying loss is the primary condition of any discussion about reparation. However, where the environment is concerned, this does not appear to be the case. There is little doubt that, at least in part, the environment consists of material components, some of which are frequently referred to as "natural resources". This is not always the case regarding how these elements are valued. As discussed in Chapter 1, given the disagreement on the definition of "environmental values", it is unclear whether and to what extent damage to these values deserve material reparation or how to provide it.[2]

Therefore, it is of the utmost importance to identify, individualise, and conceptualise environmental values. Environmental values are part of the underlying ethical basis of international environmental law. The area of

[1] Clive S Lewis, *The Abolition of Man* (Harper Collins 2001), 73. This thesis adheres to moral realism, which proposes that values are objective and thus independent of each valuer's subjective opinion or feelings. Among moral realists is George E Moore, who stated that '[my] own good' only denotes some event affecting me, which is good absolutely and objectively […] there is no third alternative conception 'good for me'. Refer to George e Moore, *Principia Ethica* (CUP 1922), 170. Also, David Ross, *The Right and the Good* (OUP 2003), 15.
[2] Refer to Chapter 1, section 4.2.

human knowledge dedicated to their study is *environmental ethics*, a field of philosophy concerned with human behaviour towards nature. [3]

This chapter will explore the literature on environmental ethics to seek the definition of environmental values most in line with their expression in international law. In parallel, it will, whenever possible, examine their recognition and protection in international law. It will reveal that, even among ethicists, there is no agreement on what components of the environment are valuable, or how they should be valued. After studying their classification, the chapter will review international law to reveal how states have agreed to recognise each of these values as relevant and deserving of protection. Once this is identified, the following chapters will assess whether harm to these values deserve redress and how it can be provided.

As a note of caution, it should be acknowledged that the fields of environmental economics, ethics, and environmental ethics are well-established and developed disciplines. For reasons of space and scope, the discussions in this chapter do not intend to exhaust the subjects, but merely to equip the reader with basic foundational concepts on nature's value so that the following chapters may develop the discussion on their reparation.

[3] Paul W Taylor, *Respect for Nature* (PUP 2011), 3.

1. The Disagreement Over the Concept and Expression of Environmental Values

There are frequent references in international documents and the scholarly literature to the consequences of damage to "environmental values" and to their reparation. However, there is no uniform understanding of the meaning of the term and how to redress these losses. ILC Special Rapporteur Julio Barboza referred to the need to distinguish between the "environment proper" and "environmental values", adding that environmental values are an additional aspect of the environment. To him, although they are separate from the environment, environmental values are restricted to human uses and feelings about the environment[4]; while distinct from the environment, environmental values can be affected as a result of environmental damage and thus need to be 'included within an enlarged concept of environmental damage'.[5]

A fundamentally different view proposes that, in addition to external environmental values, there are values which are intrinsic to the environment. These are commonly referred to as *intrinsic values*.[6] For example, in a separate opinion to the same *Certain Activities* judgment on compensation, Judge Cançado Trindade stated that the reparation of environmental damage should address losses of 'intrinsic value of the environment'.[7]

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[4] Julio Barboza, 'The ILC and Environmental Damage' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 75.
[5] Ibid, 76.
[6] John O'Neil et al, *Environmental Values* (Routledge 2008), 98.
[7] *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*

There tends to be a general agreement on the obligation to provide reparation for damage to environmental values. The *Institut de Droit International* has expressed concern over the uncertainty surrounding environmental reparation, suggesting the development of 'additional criteria' for compensation of 'aesthetic and other non-use values'.[8] Commentaries to Article 36 of the Articles on the Responsibility of States for Wrongful Acts (ARSIWA) specify that '[d]amage to such environmental values [… is …] no less real and compensable than damage to property'.[9] In the *Construction of a Road case*, Nicaragua argued that Costa Rica's actions harmed environmental values which deserve compensation.[10] In a separate opinion to the *Certain Activities* compensation award, Judge Bhandari regretted that the Court's valuation disregarded environmental values.[11]

Despite being a highly abstract concept, environmental values are frequently recognised as a relevant fraction of environmental damage, which should be subject to compensation. As a result, it is important to adequately identify and define these values.

Rica), Compensation, Separate Opinion of Judge Cançado Trindade [2018] ICJ Rep 15, Para 70.

[8] Institut de Droit International, 'Responsibility and Liability under International Law for Environmental Damage' (Session of Strasbourg 1997), Article 25.

[9] ILC, 'Draft articles on Responsibility of States for Internationally Wrongful Acts' (2001) II (2) *YILC* 31 UN Doc A/56/10 (ARSIWA), Article 36 Commentary 15; see also ILC, 'Report of the International Law Commission on the Work of its 53rd Session' (2001) II(2) *YILC* 1 UN Doc. A/56/10 (2001 Report), 101.

[10] *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v Costa Rica),* Application Instituting Proceedings, available on < https://www.icj-cij.org/public/files/case-related/152/16917.pdf> accessed 5 July 2021 (Construction of a Road, Institution of Proceedings), Para 12.

[11] *Certain Activities,* Compensation, Judgment (n 7) Separate Opinion of Judge Bhandari, Para 10.

Despite the importance of the theme, there is frequent confusion over the meaning and extent of the expression “environmental value”. As a result, this thesis turns to the field of the study of values and, more specifically, to its sub-branch devoted to environmental values.

The value theory is a branch of philosophy devoted to the study of values, which underpins every legal system. A functional ethical framework is essential for society to address its challenges and solve its problems.[12] In their turn, environmental ethicists consider the study of environmental values. Within the scientific community, definitions and evaluations of biodiversity are influenced by subjective perspectives and value-based beliefs.[13]

2. Environmental Ethics

Ethics or moral philosophy is the branch of philosophy dedicated to classifying human behaviour as right or wrong, what is morally preferable or prohibited, encompassing discussions over justice and injustice.[14] We use the term “moral” to refer to that which is good or desirable and should therefore guide human acts towards what is right.[15] Ethical reasoning involves philosophical reasoning and judgement about morality and moral

[12] Robin Attfield, *The Ethics of the Global Environment* (EUP 1999), 27.
[13] Anna Lawrence, ‘Introduction: Learning from Experiences of Participatory Biodiversity Assessment’, in Anna Lawrence (ed), *Taking Stock of Nature: Participatory Biodiversity Assessment for Policy, Planning and Practice* (CUP 2010), 23.
[14] Christopher D Stone, ‘Ethics and International Environmental Law’ in Daniel Bodansky, Jutta Brunnée, Ellen Hey (eds) *The Oxford Handbook of International Environmental Law* (OUP 2008), 292.
[15] Joseph Pieper, *The Four Cardinal Virtues* (Helen and Kurt Wolff 1965), 35.

problems.[16] According to Joseph Pieper, revealing morally right actions presupposes knowledge not only of factual reality but also of the 'universal principles of reason' related to ethical action.[17] Different ethical systems have been developed with this goal, trying to identify moral duties, distinguishing the good from the bad.[18]

Environmental ethics is the branch of ethics concerned with the morality of our behaviour towards nature.[19] It aims to guide stakeholders towards morally acceptable decisions, steer public opinion, and justify rules that impose appropriate behaviour.[20] It involves debates over our standard of treatment of the environment and orient us in complex ethical choices. Take sustainable development, for instance, a concept which accepts some environmental damage to the extent it does not compromise the interests of future generations. In contrast, some ethicists propose that the moral choice would be strict nature preservation, even at the expense of imposing greater sacrifices to the current generation.[21]

The topic of environmental ethics is no longer limited to philosophy journals but has been embedded in international law. For instance, the UN World Charter for Nature provides that *'*man must be guided by a moral code*'* in its relationship with nature, requiring the sacrifice of human

[16] William K Frankena, *Ethics* (2nd edn, Prentice-Hall 1973), 4.
[17] Pieper (n 15) 10.
[18] Georg Henrik von Wright, *The Varieties of Goodness* (Routledge 1963), 2; also, Timothy Chappell, *Knowing What To Do: Imagination, Virtue, and Platonism in Ethics* (OUP 2014), 14; also, Attfield, *The Ethics of the Global…* (n 18) 27.
[19] Taylor (n 3) 3.
[20] Stone, 'Ethics and…' (n 14) 292.
[21] Michael Bowman, 'Biodiversity, Intrinsic Value, and the Definition and Valuation of Environmental Harm' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law. Problems of Definition and Valuation* (OUP 2002), 42-43.

interests to protect the environment.[22] These ethical discussions question the traditional centrality of human interests (anthropocentrism), revealing the extent to which we should sacrifice our desires in favour of conservation.[23]

2.1. Schools of Ethical Thought

Unlike exact sciences, ethical decisions are permeated by uncertainty.[24] Different theories dispute the most relevant aspects of the environment.[25] As a result, they propose different answers for the same factual situation in which we aim for conservation.[26] This section will present some of the most relevant schools for our topic.

2.1.1. Consequentialist-Utilitarian School

The main ethical foundation of international environmental law is consequentialism. Consequentialism is an ethical stance focused on the potential outcomes (consequences) of human actions.[27] Its most prominent form is utilitarianism. "Utility" refers to pleasure, happiness, or the absence of pain. This ethical school classifies human behaviours according to their foreseeable consequences. Utilitarianism is hedonistic and always considers that the moral behaviour is the one likely to lead to

[22] UNGA, 'World Charter for Nature' Res 37/7 (1982) UN Doc A/RES/37/7, Preamble.
[23] Alexander Gillespie, *International Environmental Law, Policy and Ethics* (2nd ed, OUP 2014), 1; also, Richard Sylvan, 'Is there a Need for a New, an Environmental, Ethic?' in Andrew Light and Holmes Rolston, III (eds), *Environmental Ethics* (Blackwell 2012), 48; also, Attfield, *The Ethics of the Global…* (n 18) 27.
[24] Pieper (n 15) 18.
[25] Stone, 'Ethics and…' (n 14) 293.
[26] John Alder and David Wilkinson, *Environmental Law and Ethics* (Macmillan 2009) 383.
[27] Robin Attfield, *Environmental Ethics* (Polity 2003), 84.

the most pleasure and *the least pain*. All conflicting interests represent *units of utility* which are factors in equations that reveal the maximum possible welfare. In this pursuit of the greatest possible happiness, all sacrifices are justifiable in principle, including that of human life.[28] To utilitarians, the absolute value is utility; their ultimate aim is to achieve the greatest possible amount of utility.[29]

Modern utilitarianism, which was founded by Jeremy Bentham,[30] classifies pleasure and pain according to their intensity, duration, certainty, proximity, and extent. It proposes that we orient our behaviour according to the good or evil *consequences* of our actions. To Bentham, mathematical equations reveal the morally acceptable course of action (the one leading to the greatest total wellness).[31] John Stuart Mill conceived the 'Greatest Happiness Principle' or utility which classifies human behaviour as right or wrong according to their outcome. Actions which lead to increased happiness are considered good, while the ones that decrease it are considered bad. Its aim was to promote 'an existence exempt as far as possible from pain, and as rich as possible in enjoyments, both in point of quantity and quality'.[32]

This association of goodness and pleasure has been criticised since ancient philosophers.[33] For example, the expression "the ends justify the

[28] Aldler and Wilkinson (n 26) 38-40.
[29] O'Neill *et al* (n 6) 70-76.
[30] Peter Singer, *Animal Liberation* (2nd ed, Pimlico 1995). 5; also, Geoffrey Scarre, *Utilitarianism* (Routledge, 1996), 40.
[31] Jeremy Bentham, *The Principles of Morals and Legislation* (Kirtchener 2000), 32-33.
[32] John Stuart Mill, *Utilitarianism* (Kirtchener 2001), 10 and 14.
[33] Aristotle, *Nichomean Ethics* (CUP 2004), 5.

means", attributed to Machiavelli's book *The Prince*, which is essentially consequentialist, has often been described as the epitome of evil.[34] Another example of an ethical stance that would be considered inadequate by many is suggested in the piece "Lifeboat Ethics: the Case Against Helping the Poor". In that article, Garrett Hardin notoriously uses utilitarianism to justify the inaction of developed nations towards the suffering in developing ones. The piece proposes that the right choice would be to refrain from helping them, in order to prevent an increase in their populations and thus further suffering.[35]

Despite criticisms, utilitarianism has been a frequent justification for conservation agreements.[36] One example is the 1902 Convention to Protect Birds Useful to Agriculture[37] which, as the name suggests, aims to conserve species to the extent that they may benefit agricultural outputs.[38]

2.1.2. Virtue Ethics

Virtue or Aristotelian Ethics is a philosophical theory which criticises the notion that ethics should aim at ends. Instead, it considers the righteousness of actions in themselves when compared to the hypothetical conduct of the *virtuous agent.*[39] To this ethical school the

[34] Celso Castro, *Maquiavel & O Principe* (Zahar 2004), 1-20.
[35] Garrett Hardin, 'Lifeboat Ethics: the Case Against Helping the Poor' (1974) *Psychology Today* available on <garretthardinsociety.org/articles/art_lifeboat_ethics_case_against_helping_poor.html> accessed 8 April 2020.
[36] Aldler and Wilkinson (n 26) 38-40.
[37] Convention for the Protection of Birds Useful to Agriculture (adopted 19 March 1902, into force 20 April 1908) 4 IPE 1615, 24.
[38] Ibid, Article 1.
[39] O'Neill *et al* (n 6) 47.

moral behaviour should be oriented by the right reasons.[40] Virtue ethics provide additional support for virtue in our subject. This is expressed in the World Charter for Nature when it requires that we respect every life form.[41] It is also the ethical justification for agreements that impose on states some procedural obligations such as *public participation* in environmental decisions.[42]

2.1.3. Deontology

Deontology is another school of ethical thought concerned with human acts as opposed to their consequences.[43] Philosophers of this school argue that conducts are classified as good or evil in the light of moral rights and duties.[44] Deontology is centred on the concept of "value". Deontologists explain that our everyday choices are generally based on an implicit consideration of values. If everything has the same value or no value, it is impossible to identify the right, prudent, or moral choice. Even if unconsciously, we are constantly making value-laden decisions that sacrifice the least important value.[45] So, when someone chooses to go to work as opposed as taking some time off, it reveals that - at least in that moment - paying their bills is more important than relaxing or having fun.

[40] Aristotle (n 33) Book 3, 5.
[41] World Charter for Nature (n 22) Preamble.
[42] Alder and Wilkinson (n 26) 41.
[43] O'Neill *et al* (n 6) 47.
[44] Scarre (n 30) 12.
[45] David McNaughton and Piers Rawling, 'Deontology' in David Copp (ed) *The Oxford Handbook of Ethical Theory* (OUP 2007) 425-426; also, Alder and Wilkinson (n 26) 40.

The principle that orients deontology is the belief in absolute values, that is, some values are so precious that they cannot be sacrificed. These are called intrinsic values and are usually attributed to human life. Having intrinsic value entitles an entity to be considered an end in itself, to be protected for its own sake,[46] and forbids its sacrifice for the common good.[47] In contrast, instrumental value is attributed to that which is valuable only for some purpose or as a means to an end.[48]

Originally, deontology reserved intrinsic value for rational beings, which is effectively restricted to human beings.[49] To Immanuel Kant every rational being 'exists as end in itself, not merely as means to the discretionary use of this or that will'.[50] As a result, it must always be considered an end in itself.[51] As the only rational beings, humans have the privilege of being considered 'for their own sake as ends in themselves'.[52] At that stage, all other beings, whether live or inanimate, are valued only instrumentally.[53] Traditional deontology is the philosophical basis of human rights.[54] However, modern environmental ethics extends intrinsic value to other life forms[55] as will be discussed in the next section.

[46] Alder and Wilkinson (n 26) 40.
[47] McNaughton and Rawling (n 45) 425-426; also, Alder and Wilkinson (n 26) 40.
[48] Immanuel Kant, *Groundwork for the Metaphysics of Morals* (YUP 2002), 61. Similarly, Pieper has noted that 'nothing can be inalienably due to a brute'. Pieper (n 15) 49.
[49] Alder and Wilkinson (n 26) 40.
[50] Kant, *Groundwork*… (n 51), 61.
[51] Ibid, 61.
[52] Alder and Wilkinson (n 26) 40.
[53] Kant, *Groundwork*… (n 51) 61.
[54] Scarre (n 30) 12.
[55] O'Neill *et al* (n 6) 98.

3. Environmental Values

To proceed with our assessment of which elements of transboundary damage are relevant and thus deserve reparation, it is important to properly define the terms frequently attached to environmental values. The literature reveals frequent terminological discrepancies in the classification of values. Some scholars refer to values as instrumental or inherent[56], yet others prefer the terms instrumental or intrinsic.[57] Others see three classes of value: instrumental, inherent (or moral), or intrinsic.[58] Rob Amos, on the other hand, refers to at least five main *interpretations* of value.[59] Finally, environmental economists use terms such as environmental values,[60] use values and non-use values. [61]

To avoid inconsistencies, this thesis will adhere to the terminology adopted by one of the early scholars of the subject. It will use George E. Moore's traditional classification of values as instrumental or non-

[56] See Gary L Francione, 'Animal Welfare and the Moral Value of Nonhuman Animals' (2010) 6(1) *Law, Culture and Humanities* 24, 29-33; Tom Regan, 'The Case for Animal Rights' in Tom Regan and Peter Singer (eds), *Animal Rights and Human Obligations* (2nd ed, Prentice-Hall 1989), 41; Tom Regan, *The Case for Animal Rights* (2nd ed, University of California 2004), 279; Nicholas Agar, *Life's Intrinsic Value* (Columbia 2001), 8.
[57] George E Moore, Philosophical Studies (Routledge 1922), 260-265; also, O'Neill *et al* (n 6) 114; also, John O'Neill, 'The Varieties of Intrinsic Value' (1992) 75 (2) *The Monist* 119, 119; also, J Baird Callicott, 'The Pragmatic Power and Promise of Theoretical Environmental Ethics: Forging a New Discourse' (2002) 11 (1) *Environmental Values* 3, 19.
[58] Michael Bowman, 'Biodiversity…' (n 21) 43; also, Brian Norton, 'Commodity, Amenity and Morality: The Limits of Quantification in Valuing Biodiversity', in E.O. Wilson (ed), *Biodiversity* (National Academy 1988), 202; also Robert Audi, *The Good in the Right: A Theory of Intuition and Intrinsic Value* (Princeton 2004), 126.
[59] Rob Amos refers to five interpretations of value: instrumental, inherent, intrinsic, ecological, and negative value. See Rob Amos, *International Conservation Law: The Protection of Plants in Theory and Practice* (Routledge 2021), 17-24.
[60] J B Ruhl, 'In Defense of Ecosystem Services' (2015) 32 *Pace Environmental Law Review* 306, 307.
[61] Jeffrey C Dobbins, 'The Pain and Suffering of Environmental Loss: Using Contingent Valuation to Estimate Nonuse damages' 1993 (43) *Duke Law Journal* 879, 898.

instrumental (or intrinsic), determining whether a being is a good on its own or a good to fulfil the interests of others.[62] Where sources refer to terms such as "ecosystem services", the thesis will, as much as possible, "convert" and refer to them in terms of values, except where it compromises the meaning of the text. This is done to ensure strict terminological consistency throughout the thesis and does not represent a rejection of other classifications.[63]

3.1. Instrumental Value

Instrumental value or goodness is the purpose of a being (the valued) in reference to its usefulness to another (the valuer). Instrumental values are subjective for they depend on the existence of another subject, an external valuer, who values the use of a particular being *as an instrument*. Humans attribute instrumental value to beings, activities, or states of affair, asserting their value as means to ends. According to Wright, 'to attribute instrumental goodness to some thing is primarily to say of this thing that it serves some purpose well'.[64]

3.1.1. Environmental Services or Ecological Services, Use Values and Non-use Values

There is frequent reference, especially among environmental economists, to "ecosystem services" or "ecological services". These scholars focus on

[62] Moore (n 56) 259; also, O'Neill, 'The Varieties…' (n 56) 119.
[63] Cf Amos (n 59) 17.
[64] Wright (n 18) 20.

tangible and economically valuable values of nature. “Ecosystem services” have been defined as the ‘economically valuable benefits [that] humans derive from ecological resources directly’.[65] In other words, the concept aims to identify and reveal the economic value of living organisms and their interaction with the abiotic environment.[66] This definition reveals that the concept is restricted to instrumental values, that is, the value of the environment for humans; ecosystem services are seen as an expression of the environment’s instrumental value. As a result, the term can generally be interchanged with “instrumental values”.

Economists generally divide environmental values into two broad categories: *use values* and *non-use values*,[67] whether beings are valued as commodities or amenities. *Use-value*[68] or *commodity value*[69] refers to the value attributed to resources that are appropriated and traded in the market. Use values can be consumptive values or non-consumptive values. Consumptive values refer, for example, to fish and crab produce extracted from a wetland.[70] Scholars also refer to *non-use value*,

[65] Ruhl (n 60) 307.
[66] James Salzman, ‘Valuing Ecosystem Services’ (1997) 24 *Ecology Law Quarterly* 887, 888. See generally, Adam I Davis, ‘Ecosystem services and the Value of Land’ 2010 (20) *Duke Environmental Law and Policy* 339, 341-342; Robert Costanza *et al*, ‘The Value of the World’s Ecossytem Services and Natural Capital’ (1997) 387 *Nature* 253, 258-259; Sander Jacobs *et a*l, ‘Biodiversity and Ecosystem Services’ in Sander Jacobs *et al* (eds), *Ecosystem Services: Global Issues, Local Practices* (Elsevier 2014), 33.
[67] Dobbins (n 61) 898.
[68] Rory O’Brien, ‘Law, Property, and the Environment: An introduction’ in Matthew Cahn and Rory O'Brien (eds), *Thinking about the Environment: Readings on Politics, Property and the Physical World* (Routledge 1996), 60.
[69] Karl Marx, *Capital* Vol 1 (Penguin 1982), 127; also, Brian Norton, ‘Commodity, Amenity and Morality: The Limits of Quantification in Valuing Biodiversity’, in E.O. Wilson (ed), Biodiversity (National Academy 1988), 201; Amos (n 59) 17.
[70] Salzman, ‘Valuing…’ (n 66) 893.

existence value,[71] or *amenity value*,[72] which are non-consumptive values. This is the value attributed to beings simply for existing. For example, people derive satisfaction from appreciating nature in the wilderness, irrespective of consumption.[73] This term is also used to refer, for example, to the value of an area of wilderness for hiking or leisure activities.[74] It encompasses the value of resources such as forests regardless of their economic use.[75]

The ecosystem services approach is considered anthropocentric, that is, it limits the appreciation of environmental values to those values which are useful to humans (instrumental value) either as commodities or amenities or any other human purpose. As a result, academics call attention to a broader range of values, particularly nature's *intrinsic, inherent*[76] or *moral* value.[77] Moreover, others distinguish direct from indirect instrumental value, ecological value, and negative value.[78] At present, there is a growing body of literature which criticises the restriction of nature's value to these anthropocentric notions,[79] calling for a broader

[71] Nick Hanley, 'The Economic Value of Environmental Damage' in Michael Bowman and Alan Boyle (eds), Environmental Damage in International and Comparative Law. Problems of Definition and Valuation (OUP 2002), 27-28.
[72] Norton (n 69) 201; also, Amos (n 69) 18.
[73] Norton (n 69) 201.
[74] Salzman, 'Valuing…' (n 66) 893.
[75] Stale Navryde and Gerald J Pruckner, 'Environmental Valuation – To Use or Not to Use?' (1997) 10 *Environmental Resource Economics* 1, 1.
[76] Bowman, 'Biodiversity…' (n 21) 43; also, Amos (n 69) 20.
[77] Norton (n 80) 201.
[78] Amos (n 69) 18.
[79] Sander Jacobs *et al*, 'Biodiversity and Ecosystem Services' in Sander Jacobs *et al* (eds), *Ecosystem Services: Global Issues, Local Practices* (Elsevier 2014), 33; also, Dobbins (n 61) 898-943.

consideration of nature's value which encompasses ethical aspects[80] and, for some, nature's value for itself.[81]

3.2. Non-Instrumental or Intrinsic Value

George E. Moore, an early scholar in the field, proposed a classification of values that simplifies their treatment to one specific aspect: whether values are considered subjectively or objectively. Subjective or instrumental value, which has been discussed above, is a value which relies on the view of an external valuer. Objective value, on the other hand, is the value that is independent from an external observer.[82] This is the value that one has for itself,[83] for its own sake, irrespective of an external valuer.[84]

This value is also called intrinsic value. A value is considered objective, intrinsic, or non-instrumental when it does not require an external valuer. This is the value that any being possesses *of itself, in itself,* and *for itself* regardless of its use to others.[85] Intrinsic value is considered "self-evident" and "objective" because it is independent from another subject, the external valuer.[86] When a being possesses intrinsic value, this creates for others the duty to respect it and *leave it alone*.[87] Inanimate objects have exclusively instrumental value, being valuable only insofar as they serve

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[80] Kai M A Chan *et al*, 'Rethinking Ecosystem Services to Better Address and Navigate Cultural Values' (2012) 74 *Ecological economics* 8, 8-12.
[81] Arena J Van Riper and Gerard T Kyle, 'Capturing Multiple Values of Ecosystem Services Shaped By Environmental Worldviews: A Spatial Analysis' (2014) 145 *Journal of Environmental Management* 374, 374.
[82] Moore (n 56) 260.
[83] Aristotle (n 33) 4.
[84] O'Neill *et al* (n 6) 114.
[85] Moore (n 56) 258-259.
[86] O'Neill, 'The Varieties…' (n 56) 131-132.
[87] von Wright (n 18) 179-182; about passive values, see Dobbins (n 61) 900.

an external purpose. A car, for example, is only valuable to the extent that it serves someone's needs. On the other hand, intrinsic value is reserved for those beings 'who can meaningfully be said to be well or ill, to thrive, to flourish, be happy or miserable'.[88]

The attribution of intrinsic value to other living beings limits our conducts towards them. This idea is at the core of modern environmental ethics.[89] However, this recognition does not grant them a *right to life,* recalling that predation is the 'most fundamental fact of life',[90] with each being having a role in the biotic community. Instead, it creates for humans the duty to respect the way of life of other beings, leaving them alone to pursue their goals as long as they do not conflict with our way of living.[91]

The recognition of nature's intrinsic value is the ethical foundation of several environmental agreements. For example, the 1979 Bern Convention attributes it to the fauna and flora[92] and the World Charter for Nature confers it to all life forms.[93] The Protocol to the Antarctic Treaty refers to the 'intrinsic value of Antarctica'.[94] The Rio Declaration refers in Principle 6 to the 'economic and non-economic values' of forest goods and services, possibly in a veiled reference to non-instrumental values.[95]

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[88] von Wright (n 18) 50.
[89] O'Neill *et al* (n 6) 98.
[90] J Baird Callicott, 'Animal Liberation and Environmental Ethics: Back Together Again' (1988) 4 (3) Between the Species 163, 168.
[91] Callicott, 'Animal…' (n 90) 168.
[92] Convention on the Conservation of European Wildlife and Natural Habitats (adopted 19 September 1979, into force 6 June 1982) (Bern Convention), Preamble; see also Sandra Jen, `The Convention on the Conservation of European Wildlife and Natural habitats (Bern, 1979): Procedures of Application in Practice' (1999) 2 *JIWP* 224, 226.
[93] World Charter for Nature (n 22) Preamble Para 3(a).
[94] Protocol on Environmental Protection to the Antarctic Treaty (adopted 4 October 1991, in force 14 January 1998) 2941 UNTS 3, Article 3.
[95] UNGA, 'Rio Declaration on Environment and Development' Res 151/26 (16 August 1992) UN Doc A/CONF.151/26(I) (Rio Declaration).

This is confirmed by the Convention on Biological Diversity (CBD), which acknowledges 'the intrinsic value of biologic diversity',[96] defined as the variability among living organisms.[97] Similarly, IUCN's Draft Covenant on Environment and Development has stressed that every life form deserves respect 'independent of its value to humanity'.[98] All provisions on conservation which are unrelated to a being's use for humanity implicitly recognise their intrinsic value.[99]

3.2.1. Absolute or Relative Character

Intrinsic value has traditionally been regarded as absolute and priceless. This meant all its bearers held it equally. According to Moore, all similar holders possess it 'always, under all circumstances, […] in exactly the same degree'.[100] This is the ethical basis of the human rights doctrine.[101] More recently, however, environmental ethicists proposed that different beings may possess it to differing degrees. To these ethicists, a being's intrinsic value would generally be proportional to its complexity and degree of self-realisation.[102] Plants, for instance, would be less significant

[96] Convention on Biological Diversity (adopted 5 June 1992, into force 29 December 1993) 1760 UNTS 69 (CBD), Preamble.
[97] Ibid, Article 2.
[98] IUCN, *Draft International Covenant on Environment and Development* (2nd edn, 2000 IUCN), 32, Article 2.
[99] For example, provisions for preserving threatened species in their natural habitats implicitly acknowledge their intrinsic value. Refer to the African Convention on the Conservation of Nature and Natural Resources (adopted 11 July 2003, into force 23 July 2016), Article X.
[100] George E Moore, 'The Concept of Intrinsic Value', in GE Moore, *Philosophical Studies* (Routledge 1922), 265; also, Thomas E Hill Jr, 'Ideals of Human Excellence' (1983) 5(3) *Environmental Ethics* 211, 214.
[101] Gillespie, 'An introduction…' (n 56) 114.
[102] Freya Mathews, *The Ecological Self* (Routledge 1991), 143.

than animals and so on.[103] One of these authors, Kenneth Goodpaster, explains that '[e]ach locus of intrinsic value defends its self and kind as a good of its own, and yet each such organism gets folded into instrumental value within the system'.[104] In this manner, environmental ethicists see intrinsic value as the recognition of life's sacredness: every life form deserves respect. In parallel, its relative character allows for more complex beings to sacrifice those less complex to preserve their own intrinsic value.[105]

Environmental ethicists contend which beings possess intrinsic value; the beings which do not possess it are the ones incapable of flourishing, being well or ill. This excludes outright all inanimate beings.[106] However, they disagree on what living beings possess it. Enlightenment philosophers restricted this to humans by virtue of our rationality.[107] Later, environmental ethicists extended it to different groups of living beings.[108] Which beings possess intrinsic values will be the topic of the next section.

4. Holders of Intrinsic Value

As previously explained, there tends to be an agreement among environmental ethicists that certain living beings possess intrinsic value.

[103] Kenneth Goodpaster, 'On Being Morally Considerable' (1978) 75(6) *The Journal of Philosophy* 308, 308-310.
[104] Holmes Rolston III, *Genes, Genesis and God* (CUP 1999), 44.
[105] Polly Higgins, 'Seeding Intrinsic Values: How a Law of Ecocide will Shift our Consciousness' (2012) 5(1) *CADMUS* 9, 9.
[106] von Wright (n 18) 51.
[107] Ed Bates, 'History' in Daniel Moeckli et al (eds), *International Human Rights Law* (3rd Edn, OUP 2018), 5-8; also, Kant (n 51) 45.
[108] Predrag Cicovacky, *Albert Schweitzer's Ethical Vision* (OUP 2009), 115-116; also, Callicott, 'The Pragmatic…' (n 56) 8.

Having intrinsic value means that a being has moral considerability, that is, it deserves to be considered in moral choices. However, ethicists disagree about which living beings are intrinsically valuable.[109] While some see it in individuals – humans and other life forms – others see it in groups of beings.[110] Far from a purely academic discussion, the attribution of intrinsic value will reveal which beings deserve protection regardless of our needs, and which deserve consideration when reparation is concerned.[111]

4.1. Humans: Anthropocentrism

Anthropocentrism is an ethical stance which places humans at the centre of ethical thinking. Traditional utilitarianism and deontology are anthropocentric, that is, they believe humans are the only beings to experience relevant pleasure or have intrinsic value.[112] Anthropocentrism is at the core of most cultures and environmental agreements.[113] For example, the Stockholm Declaration holds that 'of all things in the world, people are the most precious'[114], while the Rio Declaration states that 'human beings are at the centre of concerns for sustainable

[109] Keekok Lee, 'The Source and Locus of Intrinsic Value' in Andrew Light and Holmes Rolston, III (eds), *Environmental Ethics* (Blackwell 2012), 154.
[110] Holmes Rolston III, 'Value in Nature and the Nature of Value' in Andrew Light and Holmes Rolston, III (eds) *Environmental Ethics* (Blackwell 2012), 143-154; also, Aldler and Wilkinson (n 26) 48.
[111] Attfield, *The Ethics of the Global…* (n 18) 3.
[112] Immanuel Kant, 'Duties in Regard to Animals' in Tom Regan and Peter Singer (eds), *Animal Rights and Human Obligations* (2nd ed, Prentice-Hall 1989); also, J Baird Callicott, 'Non-Anthropocentric Value Theory and Environmental Ethics' (1984) 21 (4) *American Philosophical Quarterly* 299, 299.
[113] Gillespie, 'An introduction…' (n 56) 118; also, Gillespie, *International…* (n 23) 2-12
[114] UNGA, 'United Nations Conference on the Human Environment' Res 2994 (15 December 1972) A/RES/2994, Preamble.

development'.[115] Among the particularly anthropocentric environmental treaties are those concerning air pollution[116], the protection of the ozone layer[117] and, to a lesser extent, climate change.[118] For example, the role of forests as carbon sinks is a predominantly anthropocentric consideration.[119] Cultural justifications are found in the Ramsar Convention[120] and on the CBD.[121] Finally, aesthetic justifications are present in the World Heritage Convention,[122] and economic considerations are evident in the UNFCC[123] and, to some extent, the CBD.[124]

Some authors refer to a tempered form of anthropocentrism as "weak anthropocentrism". While still being focused on human interests, weak anthropocentrism affords non-human interests some consideration.[125] Some ethicists consider it suitable as the sole basis for conservation.[126] However, most environmental ethicists reject anthropocentrism. To them, treating the environment exclusively as a means to human purposes

[115] UNGA, 'UN Conference on Environment and Development' Res 44/228 (22 December 1989) A/RES/44/228.
[116] Convention on Long-Range Transboundary Air Pollution (LRTAP) (adopted 13 November 1979, into force 16 March 1983) 18 ILM 1442 .
[117] Vienna Convention for the Protection of the Ozone Layer (adopted 22 March 1985, into force 22 September 1988) 1513 UNTS 293.
[118] United Nations Framework Convention on Climate Change (UNFCCC) (adopted 9 May 1992, into force 21 March 1994) 1771 UNTS 107.
[119] Stone, 'Ethics…' (n 14) 295.
[120] Convention on Wetlands of International Importance Especially as Waterfowl Habitat (adopted 2 February 1971, into force 21 December 1975) 996 UNTS 245 (Ramsar Convention).
[121] CBD (n 96).
[122] ICRW (n 194); cited in Gillespie, 'An introduction…' (n 56) 118-126; cf Attfield, *The Ethics of the Global…* (n 18) 27.
[123] UNFCCC (n 118).
[124] CBD (n 96) Preamble.
[125] Brian G Norton, 'Environmental Ethics and Weak Anthropocentrism' in Andrew Light and Holmes Rolston, III (eds), *Environmental Ethics* (Blackwell 2012), 164-172.
[126] Garrett Hardin, *Living Within Limits: Ecology, Economics, And Population Taboos* (OUP 1993), 229-232.

makes it incapable of laying the foundation of a system which justifies adequate conservation.[127]

4.2. Sentient Beings: Sentiocentrism

The primary argument for expanding the sphere of moral considerability is our similarity to some animals. This has led ethicists to hold sentience as the marker for beings which are considerable in the ethical sphere. These ethical movements are considered sentiocentric. Sentiocentrism can be utilitarian or deontological. The *Animal Liberation Movement* is a utilitarian movement which proposes considering the happiness and suffering of sentient animals in utilitarian considerations.[128] To these scholars, a being's degree of considerability is proportional to its complexity. The movement proposes that all sentient animals are entitled to "humane treatment" such as a painless existence[129] and freedom from cruelty.[130] Yet, it does not preclude the humane use of sentient animals.[131]

In contrast, the *Animal Rights Movement* is a sentiocentric branch which is grounded in deontology ethics. These ethicists hold that all sentient animals are equal holders of intrinsic value and deserve to be treated equally.[132] They oppose all justifications for the exploitation and killing of

[127] Gillespie, 'An introduction…' (n 113) 14-24.
[128] J Baird Callicott, 'Animal Liberation…' (n 90) 27-28.
[129] Gaverick Matheny, 'Utilitarianism and Animals' in Peter Singer (ed), *In Defense of Animals* (Blackwell 2006), 14-19.
[130] Singer, *Animal…* (n 30) 20.
[131] Francione (n 56) 29-30.
[132] Tom Regan, 'The Case for…' (n 56) 105 and 111-112.

sentient animals,[133] remarking on their similarities to infants and mentally ill individuals.[134] They label any discrimination among these groups as *speciesism,*[135] akin to *racism.*[136] This stance categorises hunting and animal husbandry as immoral.[137] The movement has been described as extremist,[138] for denying that *predation* is inherent to nature[139] and for creating a duty of care for wild animals.[140]

Sentiocentrism ignores the fate of non-sentient beings,[141] which for some can be an obstacle to conservation.[142] As a result, sentiocentrism has limited application in our conservation efforts.[143] Nonetheless, the ideology has achieved significant influence in international environmental law, which generally recognises the intrinsic value of sentient animals as expressed in provisions which limit animal suffering.[144]

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[133] Regan, *The Case for* (n 56) 203.
[134] Tom Regan, 'The Moral Basis of Vegetarianism' (1975) 5 (2) *Canadian Journal of Philosophy* 81, 206-209.
[135] Richard R Ryder, 'Speciesism' in Marc Bekoff (ed), *Encyclopedia of Animal Rights and Animal Welfare* (Greenwood 1998), 320; also, John Cairns Jr, 'Reparations For Environmental Degradation And Species Extinction: A Moral And Ethical Imperative For Human Society' (2003) ESEP 25, 26.
[136] Peter Singer, 'All Animals Are Equal' 1974 (5) 1 *Philosophic Exchange* 103, 103-110; also, Peter Singer, 'The Place of Nonhumans in Environmental Issues' in Andrew Light and Holmes Rolston, III (eds), *Environmental Ethics* (Blackwell 2012), 57.
[137] Regan, 'The Case…' (n 132) 114.
[138] Sagoff (n 139) 298-304; also Katz (n 139) 75; Wandersee and Schussler (n 139) 86
[139] Mark Sagoff, 'Animal Liberation and Environmental Ethics' (1984) 22 *Osgoode Hall L J* 297, 298-304; also, Eric Katz, 'Is there a Place for Animals in the Moral Consideration of Nature?' 1983(4) *Ethics and Animals* 74, 75.
[140] O'Neill *et al* (n 6) 36.
[141] Balding and Williams (n 142) 1196-1197; Parsley (n 142) 601.
[142] Mung Balding and Kathryn J H Williams, 'Plant Blindness and the Implications for Plant Conservation' (2016) 30(6) *Conservation Biology* 1192; Kathryn M Parsley, 'Plant Awareness Disparity: A Case for Renaming Plant Blindness' (2020) 2(6) *Plants, People, Planet* 598; also, James H Wandersee and Elisabeth E Schussler, 'Preventing Plant Blindness' (1999) 61(2) *The American Biology Teacher* 82.
[143] Ned Hettingher, 'Environmental Ethics' in Marc Bekoff (ed), *Encyclopedia of Animal Rights and Animal Welfare* (Greenwood 1998), 159.
[144] Alexander Gillespie, 'Humane Killing: A Recognition of Universal Common Sense in International Law' (2003) 6 *Journal of International Wildlife Law and Policy* 1, 16-19.

4.3. Every Life Form: Biocentrism

According to biocentrist ethicists, the essence of intrinsic value is derived from self-realisation and the pursuit of one's own interests in the pursuit of remaining alive and reproducing, a characteristic common to all living beings.[145] Consequently, biocentrist ethics upholds the intrinsic value of all living beings,[146] yet they acknowledge a distinction between human beings and other beings. These ethicists distinguish moral agents from moral subjects. To them, all living beings are *moral subjects* and have *moral rights*. On the other hand, *moral agents* are those in a position to understand their *moral duties* towards moral subjects. Capable humans are both moral agents and moral subjects. All other living beings are exclusively moral subjects. They may be subject to right or wrong treatment, entitled to moral considerability.[147]

Critics argue that biocentrism over-expands the moral sphere,[148] making it impossible to resolve conflicts of interests.[149] In response, biocentrists maintain that the intrinsic value of living beings is proportional to their complexity. More complex beings are entitled to prioritise their survival, even if this requires sacrificing less complex life forms. Still, even the simplest life forms have minimal intrinsic value, which entitles them to be

[145] Rolston, III (n 104) 45; also, P W Taylor, *Respect for Nature* (PUP 2011), and 62-63; and Gillespie, 'An introduction…' (n 56) 126-130; Michael Bowman, 'Biodiversity…' (n 21) 48-49.
[146] J Baird Callicott, 'The Case Against Moral Pluralism' in Andrew Light and Holmes Rolston, III (eds), *Environmental Ethics* (Blackwell 2012), 204.
[147] Taylor (n 145) 16-21 and 62-63.
[148] Callicott, 'The Pragmatic…' (n 56) 8-9.
[149] Stone (n 14) 300.

left alone to pursue their ends when their existence does not pose an obstacle to the survival of other life forms.[150] This is supported by Thomas Aquinas, who saw 'no sin in using a thing for the purpose for which it is',[151] further stating that 'animals use plants, and men use animals [and plants], for food, and this cannot be done unless these are deprived of life'.[152] Among biocentric doctrines is the *Ethics of predation* which, while calling for respect for all living organisms,[153] requires from humans their respectable use.[154] As a result, until they have a purpose in the context of predation, other living beings are entitled to be left alone to pursue their goals.[155]

4.4. Collective Approaches: Species, Ecosystems, the Biosphere

In contrast to the previous approaches, collective ethical theories afford intrinsic value to groups of living beings.[156] The following are the main views on the intrinsic value of groups.

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[150] Callicott, 'The Pragmatic…' (n 56) 8-9; also, Goodpaster (n 103) 308-310.
[151] Ibid, 197.
[152] Thomas Aquinas, *The "Summa Theologica": Part II, Second Part* (R&T Washbourne 1918), 197; similarly, see J S Kolk and William D Moore, 'Maternal Love in Nature' (1861) 1(1) Medical Critical Psychology Journal 103, 104.
[153] Val Plumwood, *Environmental Culture: The ecological crisis of reason* (Routledge 2002), 154-155 and 196.
[154] Val Plumwood, *The Eye of the Crocodile* (ANU 2012), 78-83.
[155] Callicott, 'Animal…' (n 90) 168; also Plumwood, *The Eye…* (n 154), 78-83 and Plumwood (n 153) 154-155 and 196.
[156] Claire Palmer, 'An Overview of Environmental Ethics' in Andrew Light and Holmes Rolston III (eds) *Environmental Ethics* (Blackwell 2012), 23. *Contra*, see Stone, 'Ethics and…' (n 14) 298; also, Thomas A Heberlein, *Navigating Environmental Attitudes* (OUP 2012), 122; 8; Bowman (n 56) 50-51; Gary E Varner, *In Nature's Interests* (OUP 1998), 11.

a) Species

Some ethicists see species as *vital living system*s, with each individual resisting extinction, or the species' death.[157] Species, they argue, are the reason individuals matter: without them, there would be no life. Species pursue the *good of their kind*, aiming to represent and reproduce their genetic potential.[158] As a result, ethicists believe species possess intrinsic value.

b) Ecosystems

Holism regards ecosystems as *super-organisms.* Its proponents argue that they exhibit several aspects of living beings, such as the ability to modify their environment to meet their needs. Some believe they demonstrate a level of self-realisation. Therefore, as the basis of life, the value of ecosystems outweighs that of their components. Consequently, this group of ethicists advocate for a holistic treatment of our relationship with nature as a whole. [159] Among its proponents, the *Land Ethics* school of thought accuses Western culture of over-exploiting and destroying lands.[160] Their central argument is that moral behaviour is the one which 'tends to preserve the integrity, stability, and beauty of the biotic community'*.*[161]

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[157] Bowman, 'Biodiversity…' (n 21) 49-51; also Callicott, 'The Pragmatic…' (n 56) 9; also Rolston III (n 104) 42-43.
[158] Callicott, 'The Pragmatic…' (n 56) 9.
[159] Mathews (n 102) 131-137; also Bowman (n 56) 50; also Robin Attfield, *The Ethics of Environmental Concern* (Oxford 1983), 157; also Gillespie, *International…* (n 23) 131.
[160] Aldo Leopold, *A Sand County Almanac and Sketches Here and There* (OUP 1949), viii.
[161] Leopold (n 160) 224-225.

Another brand of holism, the *Deep Ecology* movement is described as an *ecosophical* movement, which supports a philosophical approach to ecology.[162] These ethicists propose the moral considerability of all elements of nature, whether living or inanimate.[163] This results in a duty to treat all creatures equally, with self-restraint and self-sacrifice.[164] The movement criticises the traditional ecologist movement, which it describes as *shallow* and anthropocentric.[165] Holism has been deemed a viable environmental strategy[166] focused on human impacts on ecosystem health.[167]

c) The Entire Planet as an Entity

Finally, some ethicists consider Earth a planet-sized entity, intrinsically valuable by virtue of its complexity and self-regulating capacity, allowing life to exist.[168] This entitles our planet to be treated as a living super-organism and creates for us a moral duty of care for Earth.[169]

4.5. Moral Pluralism

All previously discussed schools of thought are monistic. Monism maintains that an acceptable ethical system must be universalistic and

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[162] Arne Naess, 'Ecology: The Shallow and the Deep Ecology' in Matthew Cahn and Rory O'Brien (eds), *Thinking about the Environment: Readings on Politics, Property and the Physical World* (Routledge 1996), 171.
[163] Plumwood, *Environmental…* (n 153) 196.
[164] David Cooper, 'Arne Naess' in Joy Palmer (ed) *Fifty Key Thinkers on the Environment* (Routledge 2001) 214.
[165] Naess (n 162) 167-168.
[166] Gary E Varner, *In Nature's Interests* (OUP 1998), 11.
[167] Günther Handl, 'Transboundary Impacts' in Daniel Bodansky, Jutta Brunnée, Ellen Hey (eds) *The Oxford Handbook of International Environmental Law* (OUP 2008), 546.
[168] James Lovelock, *Gaia a New Look at Life on Earth* (OUP 2000), 8-10; also, Mathews (n 102) 131; also, Attfield, *Environmental…* (n 27) 3.
[169] Lovelock (n 168) 32-34

provide answers to all dilemmas in all situations. In contrast, moral pluralism holds that different values cannot be measured on a single scale.[170] This perspective allows the use of different ethical theories to resolve diverse ethical dilemmas. Its defenders propose that the moral significance of beings varies according to each particular context.[171] This approach gives moral standing to all living and inanimate beings, and even future generations.[172]

5. Environmental Values in International Law

The previous sections have explained the concepts of nature's values and their recognition in international law. Despite their recognition, ethicists have not reached a consensus on which beings are holders of intrinsic value. There is little contention over nature's instrumental values,[173] which have been used as the ethical foundation for all conservation measures aimed at protecting nature for human purposes. This is the main justification for rules on the protection of aesthetic or cultural values. For example, the CBD recognises the 'social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components'.[174] Similarly, the World Heritage Convention refers to 'cultural and natural heritage of outstanding universal value'.[175] The 1902 Convention to Protect Birds Useful to Agriculture[176] and the

[170] O'Neill *et al* (n 6) 48, 75 and 81; also, Gillespie, *International…* (n 23) 2-12 and 117.
[171] Cristopher D Stone, *Earth and Other Ethics* (Harper and Row 1987), 117-134.
[172] Ibid, 146-148 and 154.
[173] Barboza, 'The ILC and Environmental…' (n 4) 75-76; also, ILC, ARSIWA (n 1) Article 36 Commentary 15.
[174] CBD (n 96) Preamble.
[175] Convention For The Protection Of The World Cultural And Natural Heritage (adopted 16 November 1972, in force 17 December 1975) 1037 UNTS 151 (World Heritage Convention), Preamble.
[176] Convention for the Protection of Birds (n 37).

1900 Convention Aimed at Ensuring the Conservation of the Diverse Species Living in the Wild State in Africa Which Are Useful or Harmless to Man[177] are clearly focused on protecting nature that is instrumentally valuable (useful) for human populations.

This contention is mainly restricted to whether some beings are holders of intrinsic value and, if so, which ones possess it. Despite the disagreement of ethicists with pluralistic approaches,[178] international environmental law sees no problem with recognising the intrinsic value of several beings or groups. It has used a rather pragmatic approach, with different ethical justifications used according to the context.[179] International law recognises the intrinsic value of all living beings regardless of their use to man (that is, regardless of their instrumental value). For example, the World Charter for Nature states that '[e]very form of life is unique, warranting respect regardless of its worth to man'.[180] Similarly, the Earth Charter states that 'every form of life has value regardless of its worth to human beings', and should be treated 'with respect and consideration'.[181]

Furthermore, the international legal system appears to acknowledge the intrinsic value of sentient beings. This is revealed in provisions

[177] 1900 Convention Aimed at Ensuring the Conservation of the Diverse Species Living in the Wild State in Africa Which Are Useful or Harmless to Man (London Convention) (adopted 19 May 1900, not into force) 4 IPE 1607.
[178] Callicott, 'The Case…' (n 146) 209-215. For a distinction between moral pluralism and post-modernism, refer to Stone, *Earth and Other…* (n 171) 132-133.
[179] Gillespie, 'An introduction…' (n 56) 117.
[180] World Charter for Nature (n 22) Preamble.
[181] The Earth Charter International, 'The Earth Charter' available on <https://earthcharter.org/invent/images/uploads/echarter_english.pdf> Accessed 11 February 2019, Principles 1(a) and 15.

establishing the obligation of states to prevent unnecessary suffering. For example, the Antarctic Seals Convention provides for the 'humane use' of those mammals.[182] The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),[183] the 1991 Protocol to the Antarctic Treaty[184] and the Treaty of Amsterdam[185] include restrictions to animal suffering. The African Convention,[186] the Berne Convention[187] and the 1976 Convention on the Protection of Fur Seals articulate this by providing for their humane use.[188] Within the CBD, parties have called for 'efficient, ethical and *humane* use'[189] and required the humane handling of animals.[190] The Earth Charter advocated preventing animal cruelty in human societies, hunting, and fishing.[191] This

[182] Convention for the Conservation of Antarctic Seals (adopted 1 June 1972, into force 11 March 1978) 1978 UNTS 175, Article 3; also, Arthur Watts, *International Law and the Antarctic Treaty System* (CUP 1992), 39.
[183] Convention on International Trade in Endangered Species of Wild Fauna and Flora (adopted 3 March 1973, entry into force 1 July 1975) 993 UNTS 243 (CITES), Articles III (2)(c), III(4)(b), IV(2)(c), IV (5)(b), V (2)(b), VII(7)(c); also, Katie Sykes, 'An Inquiry into the Status of a General Principle of International Law on Animal Welfare' (2011) 49 *CYIL* 3, 7.
[184] Protocol on Environmental Protection to the Antarctic Treaty (adopted 4 October 1991, entry into force 14 January 1998) 30 ILM (1991) 1461, Article 3(6) Annex II.
[185] 1997 Treaty of Amsterdam Amending the Treaty on the European Union, the Treaties Establishing the European Communities and Certain Related Acts (adopted 2 October 1999, entry into force 1 March 1999) 2700 UNTS 161 (Treaty of Amsterdam), Protocol 33.
[186] 1900 Convention Destinée à Assurer la Conservation des Diverses Espèces Animales Vivant à l'Etat Sauvage en Afrique qui sont Utiles à l'Homme ou Inoffensive (adopted 19 May 1900, not into force) 4 IPE 1607.
[187] Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) (adopted 19 September 1979, into force 1 June 1982) ETS 104.
[188] Convention on the Conservation of North Pacific Fur Seals (adopted 7 May 1976, into force 12 October 1976) 1988 UNTS 298.
[189] CBD CoP, 'Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity', UN Doc UNEP/CBD/COP/DEC/VII/12 of 13 April 2004, Principle 11, Operational Guidelines.
[190] CBD CoP, 'Decision Adopted by The Conference of the Parties', UNEP/CBD/COP/DEC/XI/25 5 December 2012, Annex Para 3; also, CBD CoP, 'Decision Adopted by The Conference of the Parties' UN Doc UNEP/CBD/COP/DEC /XII/16 of 17 October 2014, Para 18(d).
[191] The Earth Charter International, 'The Earth Charter' (n 181).

has led some to argue for an emerging principle of humane treatment of animals in international law.[192]

The intrinsic value of species or groups is also widely recognised by international agreements. For instance, the CBD recognises the 'intrinsic value of biological diversity'.[193] While several agreements provide for the protection of groups, they do not usually make it clear whether the protection is based on their intrinsic or instrumental value. Among these can be cited the Whaling Convention,[194] the CITES,[195] the CBD,[196] the Ramsar Convention,[197] the Western Hemisphere Convention,[198] the 1900 African Convention,[199] the 1911 Seals Convention,[200] and the 1916 Birds Convention.[201]

As discussed, international agreements expressly recognise or express the intrinsic value of different elements of nature. As a result, respected scholars support the recognition of intrinsic values in the international legal system. Among them, it is worth citing Alfred Rest,[202] Cristina

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[192] Michael Bowman *et al*, *Lyster´s International Wildlife Law* (2nd Edn, CUP 2010), 680; also, Sykes (n 183) 41; A D´Amato and Sudhir Chopra, 'Whales: Their Emerging Right to Life' (1991) 85 *AIJIL* 21, 50.
[193] CBD (n 96) Preamble, Par 1.
[194] International Convention for the Regulation of Whaling (adopted 2 December 1942, into force 10 November 1948) 161 UNTS 72
[195] Convention on International Trade in Endangered Species of Wild Fauna and Flora (adopted 3 March 1973, into force 1 July 1975) 993 UNTS 243
[196] CBD (n 96)
[197] Ramsar Convention (n 120)
[198] Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (adopted 12 October 1940, into force 1 May 1942) 161 UNTS 193 (1940 Western Hemisphere Convention)
[199] African Convention (n 186)
[200] Convention Between the United States of America, the United Kingdom of Great Britain and Northern Ireland, and Russia, for the Preservation and Protection of Fur Seals (adopted 7 July 1911 into force 15 December 1911 8 IPE 3682
[201] Convention for the Protection of Migratory Birds in the United States and Canada (Adopted 16 August 1916) 4 IPE 1638
[202] Ibid, 32 and 38-39

Voigt,[203] Malgosia Fitzmaurice,[204] and Michael Bowman.[205] Given the explicit recognition and legal protection of nature's value in international law, nature's intrinsic value appears to be one of the many legitimate interests of states within their territories. As a result, states are expected to refrain from causing harm to these values beyond their borders. Similarly, breaches to this duty should lead, as far as possible, to their material reparation.

6. Conclusion

The value theory is a well-developed subject within the environmental ethics subject. Within international law, however, these terms are not generally defined in documents. An assessment of legal documents of international environmental law reveals that environmental values are frequently protected implicitly, and sometimes explicitly, thus the need to assess the relevant literature for their meaning. This chapter has investigated the definitions of different values in the relevant scholarly literature of environmental ethics, to reveal the original meaning of terms. It revealed that, in the environmental ethics literature, there is little doubt about the meaning of terms such as "environmental values", "instrumental values", and "intrinsic values". Although ethicists disagree on their expression, that is, which beings possess "intrinsic value", this discussion revealed that this type of value is restricted to living beings or their groupings.

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[203] Christina Voigt, 'International Responsibility and Liability' in Lavanya Rajamani and Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law* (OUP 2021), 1012-1013
[204] Fitzmaurice, 'International Responsibility…' (n 1) 1015
[205] Michael Bowman, 'Biodiversity…' (n 21) 43

As discussed, environmental values can ultimately be reduced to instrumental and intrinsic values. In international law, relevant values, which deserve protection and reparation, are those which have been agreed upon by states. This chapter revealed that international agreements have expressed the recognition of both instrumental and intrinsic environmental values. Among recognised instrumental values are the so-called “environmental services” or “ecological services”, which are interpretations of the usefulness of environmental resources to humans. In addition, this chapter revealed that many environmental resources have been expressly recognised as intrinsically valuable.

This recognition will reflect on rules regarding the prevention of environmental harm and its reparation. Any rules on the prevention of environmental damage will imply the aim to prevent harm to elements that have been recognised. Where these rules are violated, and these elements are harmed is the point where things become more complicated. It is generally not a problem to compensate for instrumental values, which will be generally done with reference to diminution in market prices. However, it might be more complicated to compensate for the loss of intrinsic values. Intrinsic value is the value of life, and life is an intangible concept. Throughout, this thesis will discuss the rules on prevention and reparation of environmental damage. As a rule, this expression should be understood in the broad sense, including the protection and reparation of the whole environment and its legally recognised values.

'This is not an obligation of result'.[1]

Patricia Birnie et al.

Following the identification of environmental values as part of the concept of "environment" in the previous chapter, this chapter will address the preventive obligation as an essential aspect of sustainable development. It will assess whether this obligation extends beyond the environment and natural resources that are useful for humans and are economically relevant. Following the analysis of its evolution in international arbitration, it will discuss some of its characteristics, such as due diligence. This discussion will set the stage for subsequent chapters, which will explore the consequences of its breaches.

1. Preventive Duties of States in International Law

The duty to abstain from harming the interests of others is a long-established legal principle. In Roman Law, this obligation was phrased as *neminem laedere* (or "you shall not harm anyone"), and regarded as a postulate of equity and natural law.[2] In international law, the "no-harm" obligation is expressed by the fundamental principle of good

[1] Patricia Birnie *et al*, *International Law and the Environment* (3rd edn, OUP 2009), 147.
[2] *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v Nicaragua)* (Compensation, Judgment), (2018) ICJ Rep 15 Separate Opinion of Judge Cancado Trindade, Para 11.

neighbourliness, also phrased as *sic utere tuo ut alienum non laedas.*[3] As a result of this principle, there is a general expectation that states use their territories to pursue their own interests, insofar as its use does not affect the interests of other states.[4]

Provided for in several international agreements,[5] the duty of prevention expresses the old adage of prevention being preferable to cure.[6] Described as 'the most fundamental rule of modern international environmental law',[7] prevention is a cornerstone of modern international environmental law[8] and one of the most relevant drivers of its development.[9] The duty of prevention has become such a basic foundation of the subject that it is contemporarily seen as an 'anticipatory principle' towards the assessment of control of the risk of activities.[10]

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[3] ILC, 'Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, with commentaries' (2001) II(2) YILC 148 (Draft Articles on Prevention), Article 3, Commentary 1; also, Malgosia Fitzmaurice, 'The International Court of Justice and International Environmental Law' in Christian J Tams and James Sloan (eds), *The Development of International Law by the International Court of Justice* (OUP 2013), 356.
[4] Pierre-Marie Dupuy, 'Le Fait Générateur de la Responsabilité Internationale des États' (1986) 188 *RDC* 13, 69; also Brian D Smith, *State Responsibility and the Marine Environment: The Rules of Decision* (Clarendon 1988), 72-73; Karin Mickelson, 'Rereading Trail Smelter' in Bratspies and Miller (eds) *Transboundary Harm in International Law* (CUP 2006), 80; Günther Handl, 'Transboundary Impacts' in Daniel Bodansky, Jutta Brunnée, Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (OUP 2008), 533.
[5] Among them are the Stockholm (UNGA, 'The Stockholm Declaration on the Human Environment' UN Doc UN Doc. A/CONF. 48/14, at 2 and Corr 1 (1972) and Rio Declaration (UNGA, 'Rio Declaration on Environment and Development' Res 151/26 (16 August 1992) UN Doc A/CONF.151/26(I) (Rio Declaration), Principle 2).
[6] ILC, Articles on Prevention (n 3) Para 2; also, Duvic-Paoli (n 10) 1.
[7] Duncan French, 'Reappraisal of sovereignty in the light of global environmental concerns' (2001) 21(3) Legal Studies 376, 381.
[8] Tim Stephens, *International Courts and Environmental Protection* (CUP 2009), 152.
[9] Günther Handl, 'Transboundary Impacts' (n 4) 531.
[10] Leslie-Anne Duvic-Paoli, *The Prevention Principle in International Environmental Law* (CUP 2018), 8.

The International Law Commission (ILC)'s Draft Articles on Prevention of Transboundary Harm from Hazardous Activities (Draft Articles on Prevention) has defined the duty of prevention as the expectation that states 'take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof'.[11] In order to prevent harm beyond their borders, states may face limitations in the use of their territories. In addition, they are expected to regulate the acts of private parties within their territories which are likely to result in such damage.[12] To the ILC, the duty of prevention results in the expectation that states behave proactively, formulating policies, regulating activities, and using their natural resources in ways that will not cause harm to the environment of other states.[13]

Prevention is seen both as a principle and an obligation of international law. According to Leslie-Anne Duvic-Paoli, the preventive principle aims to control and monitor activities to prevent damage to the environment beyond a state's border.[14] Similarly, Philippe Sands has described the preventive principle as the duty of states to pay due regard to each other's environment.[15] This results in an expectation beyond the mere abstention from harming others. In addition, it creates for states the obligation to continuously assess the risks of activities within their territories for the likelihood of causing damage to other states.[16] Arie Trouwborst describes

[11] ILC, Articles on Prevention (n 3) Article 3.
[12] Ibid, Preamble; also, Rene Lefeber, *Transboundary Environmental Interference and the Origin of State Liability* (Kluwer 1996), 19-21.
[13] ILC, Articles on Prevention (n 3) Preamble, Commentary 1.
[14] Duvic-Paoli (n 10) 329-330.
[15] Philippe Sands, *Principles of International environmental Law* (2 edn, CUP 2003), 248.
[16] Tullio Scovazzi, 'State Responsibility for Environmental Harm' (2001) 12 *YIEL* 43, 49.

the preventive principle as 'a predominantly environmental concept' expressed by the duty of the state to regulate risks and pursue measures to protect the environment.[17] As a result, the preventive principle possesses a pre-emptive character, with the expectation that states take active steps to prevent damage to the environment of other states. Among these steps, states are expected to regulate and oversee potentially harmful activities within their jurisdictions[18]; the principle is intimately related to the idea of risk control and the adoption of preventive measures aimed at protecting the environment. It leads to ancillary obligations, such as the obligation of states to carry out environmental impact assessments (EIAs) of potentially damaging activities to assess their risk of transboundary damage.[19]

In addition to forming a principle, prevention is also regarded as an obligation of international law, representing the obligation of states to prevent harm to the environment of other states.[20] Trouwborst stipulates that following its recognition as a principle of international law, the duty of prevention has matured to a primary obligation of international law to take steps to abstain from causing harm to the territory of other states.[21] The Stockholm and Rio Declaration express the preventive obligation,[22]

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[17] Arie Trouwborst, 'Prevention, Precaution, Logic and Law: The Relationship between the Precautionary Principle and the Preventative Principle in International Law and Associated Questions' (2009) 2(2) *Erasmus Law Review* 105, 110-111. See also, Arie Trouwborst, *Evolution and Status of the Precautionary Principle on International Law* (Kluwer 2002), 35.
[18] Scovazzi, 'State …' (n 16) 49; also, Trouwborst, 'Prevention, Precaution…' (n 15) 110-112.
[19] Sands (2 edn) (n 15) 246-247; Nicolas de Sadeleer, 'The Principles of Prevention and Precaution in International Law: Two heads of the same coin?' in Malgosia Fitzmaurice (ed), *Research Handbook in International Law* (Edward Elgar 2010), 182.
[20] Duvic-Paoli (n 10) 329-330.
[21] Trouwborst, 'Prevention, Precaution…' (n 17) 112.
[22] Trouwborst, 'Prevention, Precaution…' (n 17) 111-112.

providing “the responsibility to ensure that activities that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction”.[23] Similarly, Article 3 of the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities refers to the general obligation of states to ‘prevent significant transboundary harm’.[24] Commentaries to the document clarify that the ‘principle of prevention’ is discharged by the performance of ‘obligations of prevention’.[25] At present, both judicial rulings and scholars have expressed its status as a rule of customary international law.[26] However, despite the recognition of this status, the scope and implications of the preventive obligation remain somewhat unclear, particularly regarding the standard of care and the nature of state liability (strict or fault-based).[27]

Since it is impossible to rule out all transboundary damage, breaches of the preventive obligation represent wrongful acts[28] which deserve full reparation.[29] This idea lays the foundation for the next chapters, which will deal with the consequences of its breaches.

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[23] UNGA, ‘The Stockholm Declaration on the Human Environment’ UN Doc UN Doc. A/CONF. 48/14, at 2 and Corr 1 (1972), Principle 21; also, UNGA ‘Rio Declaration on Environment and Development’ Res 151/26 (16 August 1992) UN Doc A/CONF.151/26(I) (Rio Declaration). Principle 2.
[24] ILC, Articles on Prevention (n 3) Article 3.
[25] Ibid*,* Article 3, Commentary 6.
[26] French (n 7) 385.
[27] *Ibid,* 385.
[28] Duvic-Paoli (n 10) 329-330.
[29] Julio Barboza, ‘International Liability for the Injurious Consequences of Acts not Prohibited by international Law and Protection of the Environment’ (1994) 250 *RDC* 291, 298.

2. The Evolution of Prevention as Revealed in International Arbitration

International arbitration has been central to the consolidation of the preventive principle and obligation in international law. This section will discuss their evolution as revealed in some of the most relevant cases regarding the subject.

2.1. The General Obligation to Prevent and Regulate Private Conducts to Prevent Harm to Other States

a) The *Trail Smelter Case (United States v Canada)*[30]

The remote origins of the preventive obligation emerged from the *Trail Smelter* award. Often cited as the first arbitration to express the preventive obligation,[31] the dispute between the United States and Canada concerned damage in the territory of the United States resulting from pollution produced by a smelter in the town of Trail, Canada. In the award, the tribunal found that the smelter's harmful emissions were carried across the border, causing widespread damage within the American territory.[32] The award expressed the obligation of states to abstain from causing damage to the territory of other states. In an often-quoted passage, the tribunal found that

> under the principles of international law, as well as of the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the

[30] *Trail Smelter Arbitration (US v Canada)* [1938] RIAA III 1905 (*Trail Smelter Arbitration*).
[31] Nicolas de Sadeleer, *Environmental Principles* (OUP 2002), 62.
[32] *Trail Smelter* (n 30) 1911.

territory of another or the properties or persons therein, when the case is of serious consequence.[33]

The *Trail Smelter* award is considered a significant development in the evolution of international environmental law, expressing the obligation of states to abstain from causing harm to the territory of other states.[34] At that stage, however, the dispute did not seem particularly focused on the natural environment, with discussions mostly regarding damage to property in the territory of the United States as a result of the Smelter's pollution.[35] As a result, scholars have expressed uncertainty over the consequences of transboundary damage to the environment and its reparation.[36]

b) The *Corfu Channel Case (United Kingdom v Albania)*[37]

The *Corfu Channel case* concerned the general obligation of states to abstain from causing damage to the interests of other states. Despite being unrelated to environmental damage, the dispute expresses the extent of the responsibility of states for acts of third parties within their

[33] Ibid, 1965. Refer to chapter 3, Section 4.2
[34] Pierre-Marie Dupuy and Jorge E Viñuales, *International Environmental Law* (2nd ed, CUP 2018), 5; also, Nicolas de Sadeleer, 'The Principle of Prevention' in Nicolas de Sadeleer (ed) *Environmental Principles: From Political Slogans to Legal Rules* (OUP 2002), 182; also, French (n 7) 382.
[35] Alfred P Rubin, 'Pollution by Analogy' in Rebecca M Bratspies and Russell A Miller (eds), Transboundary Harm in International Law (CUP 2006), 53-54; also, Alexandre Kiss and Dinah Shelton, 'Systems Analysis of International Law: A Methodological Inquiry' (1986) 14 *NYIL* 45, 60-62; also, Malgosia Fitzmaurice, 'International Responsibility and Liability' in Daniel Bodansky *et al* (eds) *The Oxford handbook of International Environmental Law* (OUP 2007), 1013 also, French (n 7) 382.
[36] Philippe Sands, *Principles of International Environmental Law* (3 edn, CUP 2012), 715; Mickelson (n 4) 80.
[37] *Corfu Channel Case (United Kingdom of Great Britain and Northern Ireland v Albania)* [1949] ICJ Rep 4.

jurisdictions. The dispute concerned an incident involving two British vessels, which resulted in material damage and the death and injuries of British citizens as a result of a minefield laid on Albanian waters.[38] In the award, the International Court of Justice (ICJ) found there was an obligation for states to exercise control over the behaviour of third parties within their territories to prevent damage to the interests of other states. The award expressed the obligation of states 'not to allow knowingly its territory to be used for acts contrary to the rights of other States'.[39] These findings clarified the preventive principle in international law and the duty of states to regulate the acts of third parties within their jurisdictions, with significant implications in the context of transboundary pollution.[40]

The awards discussed in this sub-section expressed the obligation of states to prevent harm to the interests of other states and their responsibility for this damage even where it results from acts of third parties operating within their jurisdictions. This obligation was later codified in the Stockholm[41] and Rio Declaration.[42]

[38] Ibid, 18-22.
[39] Ibid, 18-22.
[40] Malgosia Fitzmaurice, 'The International Court…' (n 3) 355.
[41] UNGA, 'The Stockholm Declaration on the Human Environment' UN Doc UN Doc. A/CONF. 48/14, at 2 and Corr 1 (1972), Principle 21.
[42] Rio Declaration (n 23) Principle 2.

2.2. Prevention as a Duty to Protect the Natural Environment of Other States

a) *Nuclear Tests* Cases[43]

The first disputes debating the obligation to abstain from causing damage to the environment beyond a state's border was related to nuclear tests in the Pacific Ocean and their effects on the territories of Australia and New Zealand. In 1973, both countries submitted separate applications to the International Court of Justice (ICJ) disputing the legality of the tests in light of the possibility of damage to their territories. The dispute concerned France's nuclear tests programme, carried out in French Polynesia, and its potential contamination of the territory of both claimants.[44] For many years, particularly among Pacific Nations,[45] the international community had been expressing concern with the potential harm as a result of nuclear tests in the region.[46]

The French Government rejected the Court's jurisdiction over the subject and did not file any pleadings. However, shortly after the ICJ asserted its jurisdiction,[47] the French government issued a series of notes announcing its commitment to phase out atmospheric tests in the area.[48] The Court interpreted the commitments as legally binding on France, which led to the termination of the case without an appreciation of the merits.[49] To

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[43] *Nuclear Tests (Australia v France)* [1974] ICJ Rep 253, Para 1; also, *Nuclear Tests (New Zealand v France)* [1974] ICJ Rep 45.
[44] *Nuclear Tests (New Zealand v France)* (n 43) Para 1-8.
[45] Alessandra Petrobon, 'Nuclear Powers' Disarmament Obligation under the Treaty on the Non-Proliferation of Nuclear Weapons and the Comprehensive Nuclear Test Ban Treaty: Interactions between Soft Law and Hard Law' (2014) 24 *Leiden Journal of International Law* 169, 171; also, Don MacKay, 'Nuclear Testing: New Zealand and France in the International Court of Justice' (1996) 19 *Fordham Int'l LJ* 1857, 1860-1861.
[46] UNGA Res 913 (X) (1955) UN Doc A/RES/913/(X).
[47] *Nuclear Tests (Australia v France)* (n 43) Para 13.
[48] Ibid, 32-43.
[49] Ibid, Para 59-61 and *Nuclear Tests (New Zealand v France)* (n 43) Para 62. *See* generally, Stephens (n 8) 143-145; also, Lyndel V Prott, 'Avoiding a Decision on the Merits

scholars, the early termination of the case represented a missed opportunity to clarify the preventive obligation and the relevance of environmental damage.[50]

Two decades later, New Zealand attempted to reopen its *Nuclear Tests* case against France. In the *Request for an Examination of the Situation (New Zealand v France)*[51] New Zealand challenged the legality of French underground tests recently announced to be carried out in the same area. New Zealand alleged, among other aspects, that the tests could result in the contamination of the marine environment.[52] To the ICJ, the original case dealt with in the 1970s was restricted to the legality of atmospheric tests in the area. As a result, underground tests were not within the scope of the original case, which led it to reject New Zealand's request.[53] Notwithstanding, the Court took the opportunity to remark that this rejection was without prejudice to the 'obligations of states to respect and protect the natural environment'.[54]

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in the International Court of Justice' (1976) 7 *Sydney L Rev* 433; Edward McWhinney, 'International Law-Making and the Judicial Process: The World Court and the French Nuclear Tests Case' (1975) 3 *Syracuse J Int'l L & Com* 9; Raymont Ranjeva, 'L'environnement, la Cour Internationale de Justice et sa Chambre Spéciale pour les Questions d'Environnement', (1994) 40 *AFDI* 433, 437-438.

[50] Sir Arthur Watts, 'Nuclear Tests Cases', in Rudiger Wolfrum (ed) *Max Planck Encyclopedia of Public International Law,* Vol VII (OUP 2012), Para 26. Generally, on the subject, refer to Prott (n 49) 435; also, McWhinney (n 49) 39-46; Stephens (n 8) 144; Alan Boyle, 'Remedying Harm to International Common Spaces and Resources: Compensation and Other Approaches' in Peter Wetterstein (ed), Harm to the Environment: The Right to Compensation and the Assessment of Damages (Clarendon 1997), 88.

[51] *Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests Case (New Zealand v France)* [1995] ICJ Rep 288 (*Request for an Examination of the Situation*).

[52] Ibid, Para 1-3.

[53] Ibid, Para 53-63.

[54] Ibid, Para 64.

b) Nuclear Weapons

The subject resurfaced at the ICJ in the early 1990s in two requests for advisory opinions. In the first of these, the *Legality of the Use by a State of Nuclear Weapons in Armed Conflict, Advisory Opinion,*[55] the World Health Organisation (WHO) addressed the effects of nuclear weapons on the environment.[56] On 8 July 1996, the Court found that the subject did not fall within the WHO Constitution[57] or within the scope of its activities, leading the request to be rejected.[58]

On 15 December 1994, the United Nations General Assembly made a similar request to the International Court. In the *Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion)*,[59] the UN General Assembly questioned whether international law allowed, under any circumstances, the 'threat or use of nuclear weapons'.[60] In its opinion, the Court found that, at that stage, the preventive obligation was not only part of international law, but also extended to the environment of other states:

> the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.[61]

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[55] *Legality of the Use by a State of Nuclear Weapons in Armed Conflict, Advisory Opinion* [1996] ICJ Rep 66 (*WHO Nuclear Weapons*).
[56] *WHO Nuclear Weapons* (n 55) Para 16.
[57] *WHO Nuclear Weapons* (n 55) Para 21.
[58] *WHO Nuclear Weapons* (n 55) Para 26.
[59] *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion*, [1996] I ICJ Rep 242 (*Nuclear Weapons*), Para 29.
[60] Ibid, Para 1.
[61] Ibid, Para 29.

The Court remarked, however, that this obligation and other obligations under environmental treaties were not intended to deprive states of their right of self-defence under international law. Although the Court did not find a prohibition to the use of nuclear weapons, the award expressed the principle that states need to take the environment of other states into account, even during armed conflict, avoiding unnecessary environmental damage. This leads to an obligation of states to 'take environmental considerations into account when asserting what is necessary and legitimate in the pursuit of legitimate military objectives'.[62]

c) The *Gabčíkovo-Nagymaros Case (Hungary v Slovakia)*[63]

The next dispute concerning prevention and the environment relates to the performance of a treaty between Hungary and Czechoslovakia adopted in 1977, which provided for the construction of a series of dams in the Danube River. Years after its adoption, the parties disagreed on the continuation of the project. Concerns over its effects on the environment led Hungary to unilaterally suspend the performance of its obligations under the treaty. In turn, Slovakia carried out unilateral interventions in the area.[64] As a result, on 2 July 1993, both governments submitted an application to the ICJ for the arbitration of the dispute.[65] Hungary claimed that the performance of the treaty was compromised by its current environmental obligations due to the risk to the river's environment,

[62] Ibid, P*ara* 30.
[63] *Case Concerning the Gabcíkovo–Nagymaros Project* [1997] ICJ Rep 7 (*Gabcíkovo–Nagymaros case*), Para 2-24.
[64] Ibid, Para 2-24.
[65] Ibid, Para 2.

including water quality and flow, and the resulting loss of fauna and flora.[66] To Hungary, the performance of the treaty with the completion of the project was precluded by obligations imposed by later environmental agreements.[67] In addition, the latter the state claimed reparation to its fauna, flora, and the soil, among others, as a result of Slovakia's acts.[68]

In its award, the Court acknowledged that the subsequent development of rules in international environmental law and the imposition of environmental obligations created for both states the duty to adapt the project to ensure that the performance of the treaty was compatible with their current environmental obligations.[69] However, the Court did not agree that this justified either the unilateral suspension of the performance of treaty obligations or the termination of the treaty.[70] Similarly, it was not for one of the parties to modify the project unilaterally.[71] As a result, the award urged that the parties should jointly re-assess the project and its environmental implications, taking into account 'the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage'.[72] In addition, the Court found that the parties had an obligation to compensate for each other's losses.[73]

[66] Ibid, Para 40-41.
[67] Ibid, Para 97.
[68] Ibid, Para 127.
[69] Ibid, Para 112.
[70] Ibid, Para 59 and 109.
[71] Ibid, Para 86 and 110.
[72] Ibid, Para 140-141.
[73] Ibid, Para 150-152. *See*, generally, Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law* (3rd edn, CUP 2012), 345-351.

d) The *Pulp Mills Case (Argentina v Uruguay)*[74]

The *Pulp Mills case* concerned a dispute between Argentina and Uruguay over the construction of two pulp mills in the latter's territory, near the River Uruguay.[75] Argentina's application aimed to protect the river's 'aquatic environment and prevent pollution', as well as 'biodiversity and fisheries'.[76] In addition, Argentina alleged that there would be an increase in the risk of damage to the river's waters and surrounding environment,[77] and the installation would breach Uruguay's treaty obligations under the Statutes of the River Uruguay.[78]

In its judgment, the ICJ found there was an obligation for states to prevent damage to the environment of the River Uruguay, which is a shared resource of both states. In addition, it found there was an obligation for both parties to balance the river's commercial and economic use with the activity's potential effects on the environmental damage.[79] The Court clarified that the preventive obligation creates for states the obligation to prevent damage to the natural environment beyond their borders. According to the Court, the obligation has now achieved the status of a customary rule of international law,[80] and can be defined as the use of

[74] *Case Concerning Pulp Mills on the River Uruguay (Argentina v Uruguay)* [2010] ICJ Rep 18 (*Pulp Mills case*).
[75] Ibid, Para 1.
[76] Ibid, Para 22.
[77] Ibid, Para 23.
[78] Statutes of the River Uruguay (adopted 26 February 1975, into force 18 September 1976) 1295 UNTS 331.
[79] *Pulp Mills* (n 74) Para 175.
[80] Ibid, Para 101.

> ‘all the means at [the] disposal [of a state] in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State’.[81]

e) The *Iron Rhine Arbitration (Belgium v Netherlands)*[82]

The *Iron Rhine Arbitration* concerned the modernisation of a railway line within the territory of Belgium and Netherlands. The railway had been in continuous use since the 19th Century, providing a link between Belgium and Germany. During the 1990s, the Dutch government established nature reserves along parts of the route within its territory.[83] Later, these reserves became potential obstacles to the modernisation of railway lines on Dutch territory. The parties disagreed over the Belgian project to modernise the railway. To the Netherlands, the works planned to be carried out on the railway would inflict unacceptable environmental impacts on these nature reserves.[84] In its award, the Permanent Court of Arbitration (PCA) stated the obligation of states to prevent harm to the environment of other states. To the PCA, ‘where development may cause significant harm to the environment there is a duty to prevent or at least mitigate’ it.[85]

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[81] Ibid, Para 101.
[82] *Iron Rhine Arbitration (Belgium v Netherlands)* Award of 24th May 2005, (2005) PCA ICGJ 373 (Iron Rhine).
[83] Ibid, Para 17-20.
[84] Ibid, Para 22.
[85] Ibid, Para 59.

This section examined international arbitration and how states successively challenged the obligation to prevent transboundary environmental harm. The discussion reveals that states are currently expected to act diligently to prevent harm to the environment of other states.

3. An Obligation of Due Diligence

As previously discussed, prevention is regarded both as a principle and an obligation in international law.[86] Obligations of prevention are performed by the adoption of the best efforts to prevent harm[87] and represent obligations of due diligence or means, as opposed to obligations of result. These obligations are performed by adopting the necessary steps and adhering to adequate regulations to prevent a result. They do not intend to completely rule out the possibility of damage.[88]

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[86] Duvic-Paoli (n 10) 332.

[87] ILC, 'Draft articles on Responsibility of States for Internationally Wrongful Acts' (2001) II (2) *YILC* 31 UN Doc A/56/10 (ARSIWA), Article 14, Commentary 14

[88] Dionisio Anzilotti, *Teoria Generale della Responsabilità Dello Stato Nel Diritto Internazionale Parte Prima* (Lumachi 1902), 99; also, Dupuy, 'Le Fait Générateur…' (n 3) 73; also, Malgosia Fitzmaurice, 'The International Court…' (n 3); Scovazzi, 'State …' (n 16) 49; Pierre-Marie Dupuy, 'Reviewing the Difficulties of Codification: On Ago's Classification of Obligations of Means and Obligations of Result in Relation to State Responsibility' (1999) 10 EJIL 371, 380; James Crawford, *State Responsibility: The General Part* (CUP 2013), 21; Shinya Murase, 'Perspectives from International Economic Law on Transnational Environmental Issues' (1995) III *RDC* 283, 310; Riccardo Pisillo-Mazzeschi, 'Forms of International Responsibility for Environmental Harm' in Francesco Francioni and Tullio Scovazzi (eds), *International Responsibility for Environmental Harm* (Graham and Trotman 1991), 24; Jutta Brunnée, 'Procedure and Substance in International Environmental Law: Confused at a Higher Level' (2016) 5 *ESIL Reflections 6* available on < https://esil-sedi.eu/post_name-123/> accessed 2 June 2020; ILA Study Group on Due Diligence in International Law, ILA Study Group on Due Diligence in International Law, 'Second Report' (2016) available at <http://www.ila-hq.org/index.php/study-groups?study-groupsID=63> accessed 2 December 2020; ILA Study Group on Due Diligence in International Law, 'First Report' (n 109) 148-151; Duvic-Paoli (n 10) 331-333; LFE Goldie, 'Liability for Damage and the Progressive Development of International Law' (1965) 14 ICLQ 1189; also L F E Goldie, 'International Principles of Responsibility for Pollution' (1970) 9 *Colum J Transnat'l L* 283, 283; Louis B Sohn and R R Baxter, 'Responsibility of States for Injuries to the Economic Interests of Aliens' (1961) 55(3) *AJIL* 548, Article 1-3

Similarly, in the Draft Articles on Prevention, prevention is defined as the duty to “take measures” to “prevent” transboundary harm or "minimise” its risk,[89] as opposed to a duty to “abstain” from causing transboundary harm. Its commentaries confirm that it ‘is not intended to guarantee that significant harm be totally prevented’, but that states have an obligation to ‘exert [their] best possible efforts to minimize the risk’.[90] This implies that states are not expected to abstain from potentially dangerous activities but instead to act diligently and engage with other states to prevent damage to the environment beyond its borders.[91] As a result, ‘it is the conduct of the state of origin that will determine whether the State has complied with its obligation’.[92]

In essence, what defines compliance with the obligation is the conduct of the origin state. This means that its breaches require that any damage results from a lack of due diligence. In other words, the diligent behaviour of states may exempt them from responsibility for any damage to the environment of other states. Commentaries to the Articles on Prevention confirm that the obligation does not create a duty to completely rule out transboundary damage. In this respect, the obligation of states is expressed when they ‘exert [their] best possible efforts to minimize the risk’.[93] Similarly, in the *Pulp Mills case,* the ICJ found that the preventive

[89] ILC, Articles on Prevention (n 3) Article 3; see also, Article 4
[90] ILC, Articles on Prevention (n 3) Article 3 Commentary 7
[91] Ibid, Article 8, Article 9, and Article 3, Commentary 7 and Article 10
[92] Ibid, Article 3, Commentary 7.
[93] Ibid, Article 3, Commentary 7.

obligation results from 'the due diligence that is required of a State in its territory'.[94] The Court further clarified that the obligation

> entails not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities undertaken by such operators, to safeguard the rights of the other party.[95]

3.1. Standard of Due Diligence

As stated above, the preventive obligation takes on a due diligence character. However, it may not be immediately evident when a state acted diligently to prevent the damage, and whether it is responsible for damage to another state.[96] There are different views regarding due diligence, and it is not clear which of them is applicable to the preventive obligation. For example, the UN Convention on the Law of The Sea (UNCLOS) provides the obligation of states to adopt the 'best practicable means'.[97] On the other hand, the Articles on Prevention refer to the 'best possible efforts'.[98] Its commentaries clarify that the requirement of due diligence is fulfilled when a state makes reasonable efforts to inform itself about the risks and takes appropriate measures to prevent significant transboundary harm or minimise its risk.[99] In addition, the standard of due diligence expected is

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[94] *Pulp Mills* (n 74) Para 10.
[95] Ibid, Para 197.
[96] Duvic-Paoli (n 10) 333.
[97] UNGA, Convention on the Law of the Sea (Adopted 10 Decemb.er 1982, into force 16 November 1994) (UNCLOS), Article 194
[98] ILC, Articles on Prevention (n 3) Article 3, Commentary 7.
[99] Ibid, Commentary 10.

'proportional to the degree of risk of transboundary harm'.[100] To scholars, due diligence can be summarised as the duty to take *reasonable steps* to prevent damage proportionate to the risk of the particular activity *in addition to* the means at their disposal.[101]

In essence, this means that breaches of prevention depend on the following requirements. Firstly, the origin state must have been aware of the activity and of its risks.[102] Secondly, the origin state must have had the possibility of acting to prevent or mitigate the damage and have failed to do so.[103] Thirdly, the standard of due diligence required is proportional to the degree of risk posed by particular activities and the means at the state's disposal to prevent damage. Fourthly, it requires that states impose limitations on the acts of private parties within their jurisdictions.[104] Finally, the damage must be significant and must be a direct result of the lack of due diligence.[105]

[100] Ibid, Article 3, Commentary 11.
[101] Bryan Norton, 'Commodity, Amenity and Morality. The limits of Quantification in Valuing Biodiversity' in O Wilson (ed), *Biodiversity* (National Academy 1986), 39-40.
[102] *Corfu Channel* (n 37); cf ILA Study Group on Due Diligence in International Law, 'Second Report' (2016) available at <http://www.ila-hq.org/index.php/study-groups?study-groupsID=63> accessed 2 December 2020, 5.
[103] M J L Hardy, 'Nuclear Liability: The General Principles of Law and Further Proposals' (1960) 36 *BYIL* 223, 229.
[104] Mark A Drumbl, '*Trail Smelter* and the International Law Commission's Work on State Responsibility for Internationally Wrongful Acts and State Liability' in Bratspies and Miller (eds) in Rebecca M Bratspies and Russell A Miller (eds), *Transboundary Harm in International Law* (CUP 2006), 91; also Smith, *State Responsibility…* (n 3) 39 and 78; Alexandre Kiss, '"Tchernobâle" ou la Polluition Accidentelle du Rhin par des Produits Chimiques' (1987) 33 *AFDI* 719, 722.
[105] ILC, Articles on Prevention (n 3) 152, Para 5.

4. General Aspects

4.1. The Concept of Damage in the Transboundary Context

The previous sections discussed prevention as a due diligence obligation to prevent harm to other states. In the Articles on Prevention's definition, '"harm" means harm caused to persons, property, or the environment'.[106] The somewhat circular definition clarified that states must prevent harm to the environment of other states. However, the document and its commentaries failed to provide the definition of "environment" or to specify which of its elements are relevant and deserve protection.[107] Likewise, none of the awards discussed in section 2 clarified which components or elements of the environment of other states are relevant. Instead, they limited their references to "the environment". [108] As a result, these sources do not reveal the exact concept of environment, particularly whether the duty of prevention extends to the environment *itself* and the wide range of environmental values it exhibits. The second part of this thesis will assess treaties and international practice to reveal the precise extent to which the obligation extends to the natural environment and its immaterial elements, such as environmental values.

4.2. Minimum Threshold

Another aspect of the preventive obligation is that the damage to another state must be "significant" for the obligation to be breached. The preventive obligation acknowledges the unity of our planet in ecological terms. As a result, states are expected to tolerate minor influences from

[106] Ibid, Article 2.
[107] Ibid, Article 2.
[108] *Nuclear Weapons* (n 59) Para 29; also, *Gabcíkovo–Nagymaros* (n 63) Para 140-141; *Pulp Mills* (n 74) Para 101; Iron Rhine (n 82) Para 59.

each other, meaning that within the context of the preventive obligation, damage to the environment only becomes relevant insofar as it exceeds a certain threshold.[109]

There is some uncertainty over the threshold above which transboundary damage becomes relevant.[110] The *Trail Smelter*[111] and *Lac Lanoux* cases refer to the prevention of *serious consequences*.[112] Conversely, some international agreements refer to "significant" damage. The Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) refers to impacts which are likely to cause *significant adverse effects or ecosystem changes,*[113] and the Espoo Convention aims to prevent 'significant transboundary environmental impact'.[114] Finally, the ILC Draft Articles on Prevention prescribe the need for appropriate measures to prevent *significant transboundary harm*.[115] Commentaries to the document acknowledge the ambiguity of the term "significant",[116] clarifying that the meaning of the term is defined on a case-by-case basis.

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[109] Dupuy, 'Le Fait Générateur…' (n 3) 73; also Handl, 'Transboundary Impacts' (n 9) 535-539; Gunter Handl, 'Trail Smelter in Contemporary International Environmental Law' in Bratspies and Miller (eds), *The Oxford Handbook of International Environmental Law* (OUP 2008) 130; ILC, Articles on Prevention (n 3) 149, Preamble, Commentary 1 and Article 3; Brunnée, 'Procedure…' (n 88); *contra,* omitting the *significant* standard, see Rio Declaration (n 23) Principle 2; Stockholm Declaration (n 41) Principle 21; also ILA Study Group on Due Diligence in International Law, 'First Report' (2014) (available at http://www.ila-hq.org/index.php/study-groups?study-groupsID=63) accessed 2 June 2020, 26.

[110] John H Knox, 'The Myth and Reality of Transboundary Environmental Impact Assessment' (2002) 96(2) *AJIL* 291 294; also Handl, 'Trail Smelter…' (n 109) 133; *contra*, ILC, Articles on Prevention (n 6) Article 10.

[111] *Trail Smelter* (n 30) 1970.

[112] *Lac Lanoux Arbitration (Spain v France)* (1957)12 *RIAA* 281.

[113] Convention on the Regulation of Antarctic Mineral Resource Activities (adopted 25 November 1988, not into force) (1988) 27 ILM 859 (CRAMRA), Article 4(2).

[114] Convention on Environmental Impact Assessment in a Transboundary Context (adopted 25 February 1991, into force 10 September 1997) (Espoo Convention), Article 2.

[115] ILC, Articles on Prevention (n 3) Article 3.

[116] Ibid*,* Article 3, Commentary 4.

At minimum, they require harm to be 'more than "detectable"' to become legally relevant.[117] Scholars agree on the lack of clarity of the terms "serious" and "significant", which may, in certain cases, compromise the enforceability of the preventive obligation.[118]

4.3. Prevention and Protection of Common Areas

Most of the cases in this chapter discussed prevention in a bilateral context, that is, it concerned damage to the territory of particular states. This obligation has been evident since the *Trail Smelter award*, where the tribunal clarified the obligation in international law is to act so that activities from one state's jurisdiction do not cause damage within the territory of other states.[119] Similarly, the Articles on Prevention define "transboundary damage" as the damage 'caused in the territory of or in other places under the jurisdiction or control of a State other than the State of origin'.[120]

However, there is an interest in the international community to protect areas outside the jurisdiction of any particular state. Scholars refer to areas beyond national jurisdiction as the "global commons". These are areas over which no state exercises control or sovereignty. Among them are, for example, the high seas, Antarctica, and other regions where no claim of exclusive jurisdiction has been recognised. There is a potential interest for the international community as a whole in the protection of

[117] ILC, Articles on Prevention (n 3) Article 2, Commentary 4.
[118] Knox (n 110) 1515 .
[119] *Trail Smelter* (n 30) 1965.
[120] ILC, '2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities' (2006) II (2) YILC 59 UN Doc A/CN.4/577, Add.1 and Add.2 (Principles on the Allocation of Loss), Article 2(c).

these areas.[121] International obligations owed to the international community as a whole are also referred to as *erga omnes* obligations.[122] In the *Barcelona Traction case,* the ICJ found that by their nature - and in view of their importance - 'all States can be held to have a legal interest in their protection'.[123] Similarly, the Draft Articles on Responsibility of States for Internationally Wrongful Acts (ARSIWA) affirms that states may be held responsible for breaches of obligations owed to groups of states or the international community.[124]

International agreements suggest that the scope of the preventive obligation extends to areas beyond national jurisdiction. Both the Stockholm and the Rio Declarations provide the obligation for states to abstain from causing damage 'to the environment of […] areas beyond the limits of national jurisdiction'.[125] Similarly, the United Nations Convention on the Law of the Sea (UNCLOS) provides the obligation for states to ensure 'that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights'.[126] Under the Basel Convention, states have

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[121] Surabhi Ranganathan, 'Global commons' (2016) 27(3) *EJIL* 693, 693.
[122] Ibid, Para 33; also, Phoebe Okawa, 'The Legacy in the Field of Transboundary Air Pollution' in Rebecca M Bratspies and Russell A Miller (eds), *Transboundary Harm in International Law* (CUP 2006) 212-213; Malgosia Fitzmaurice, 'The International Court…' (n 3) 357.
[123] *Barcelona Traction, Light and Power Company, Limited* (Judgment) [1970] ICJ Rep 3, Para 33.
[124] ILC, ARSIWA (n 87) Article 48 (1), Article 1, Commentary 4, and Article 12, Commentary 6.
[125] Rio Declaration (n 23) Principle 2; Stockholm Declaration (n 41) Principle 21.
[126] UNGA, Convention on the Law of the Sea (Adopted 10 December 1982, into force 16 November 1994) (UNCLOS), Article 194 (2). See also United Nations Framework Convention on Climate Change (adopted 20 January 1994, into force 21 March 1994 UN Doc A/RES/48/189 (UNFCCC), Preamble; Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal (Adopted 10 December 1999, not into force) UN Doc.UNEP/CHW.1/WG/1/9/2, Art 3(c).

agreed to protect Antarctica, abstaining from disposing of waste beyond 'the area south of 60o South latitude'.[127] Similarly, in the *Nuclear Weapons Advisory Opinion*, the ICJ found that the obligation to abstain from harming 'areas beyond national control', is now part of international customary law.[128] Scholars agree that states must control the effects of activities undertaken within their borders to prevent damage beyond them.[129]

Conclusion

This chapter discussed the preventive duties of states regarding the protection of the environment. It explained the duty of prevention of states, expressed by the expectation that states continuously assess the risk of activities within their territory for their potential to cause damage to the environment beyond their borders. In addition, it discussed the preventive obligation, which means that states must behave diligently to prevent damage beyond their jurisdictions. The chapter assessed the evolution of the obligation in international arbitration, revealing that the preventive obligation has reached the status of customary international law. However, a critical insight of this discussion is the lack of precision in the use of the term "environment". So far, this discussion revealed that

[127] Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal (Basel Convention) (adopted 22 March 1989, into force 5 May 1992) 1673 UNTS 126, Article 4(6).
[128] *Nuclear Weapons* (n 59) Para 29.
[129] Barboza (n 29) 398; also James Crawford, 'The ILC's Articles on Responsibility of States for Internationally Wrongful Acts: A Retrospect', (2002) 96 *AJIL* 874, 886; Smith, *State Responsibility…* (n 3) 76; Birnie *et al* (n 1) 139; Malgosia Fitzmaurice, 'The International Court…' (n 3) 356-360; Daniel B Magraw, 'The International Law Commission's Study of "International Liability"' (1986) 80(2) *AJIL* 305, 308.

states have an obligation to abstain from causing harm to at least some aspects of the environment of other states. From this discussion, there is no indication that environmental values are not protected by the preventive obligation. As should be expected, breaches of this obligation result in an obligation to provide reparation to the environment and its lost values.[130]

This discussion revealed that, although the preventive obligation does not preclude the performance of hazardous activities, it mandates a standard of behaviour aimed at minimising such risks.[131] As a result, states are expected to adopt regulations to assess and prevent transboundary damage to the natural environment and its corresponding values.

The following chapters will discuss prevention in the latter sense, as a primary obligation which, once breached, leads to a secondary obligation to provide reparation. This will serve as a building block for the following chapters. Chapter 4 will discuss the responsibility of states for damage to the environment of other states to investigate the consequences of breaches of the preventive obligation.

[130] Barboza (n 29) 398.
[131] ILC, Articles on Prevention (n 3) Article 3, Commentary 7.

> *'environmental damage will often extend beyond that which can be readily quantified in terms of clean-up costs or property devaluation. Damage to such environmental values (biodiversity, amenity, etc.—sometimes referred to as "non-use values") is, as a matter of principle, no less real and compensable than damage to property, though it may be difficult to quantify'.*[1]
>
> *International Law Commission*

Following on from our previous discussions, this chapter will assess the consequences of breaches of the preventive obligation and reveal the options of redress for this sort of damage available in international law. Although it seems intuitive that breaches of the preventive obligation should lead to material reparation, this thesis has discussed the scepticism about the compensability of this damage.[2]

This chapter will assess the law of responsibility of states to clarify its adequacy to address transboundary environmental damage. Aside from the International Law Commission's (ILC) work on the subject, the chapter will assess international precedents and the literature concerning the subject having in mind the concept of full reparation, and how it applies to

[1] ILC, 'Draft articles on Responsibility of States for Internationally Wrongful Acts' (2001) II (2) *YILC* 31 UN Doc A/56/10 (ARSIWA), Article 36, Commentary 15.
[2] Refer to Chapter 1, Section 3.2.

damage to the environment in a broad sense. Finally, it will assess the use of traditional remedies to redress this sort of damage.

1. A Note on Terminology: Responsibility and Liability

The first and foremost need when undertaking research is terminological consistency. When treating the responsibility of states and transboundary damage, international documents frequently refer to the terms "responsibility" and "liability". The expression "state responsibility" has been defined as 'the principle which establishes an obligation to make good any violation of international law producing injury, committed by the respondent State'.[3] In other words, it means that non-compliance with an obligation entitles the offended party 'to call upon the perpetrator to accept the consequences of his irresponsible behaviour'.[4] Liability, on the other hand, is generally understood as 'attaching legal consequences to unlawful behaviour, thereby implying a legal obligation to provide for redress'.[5] In common law systems, "responsibility" refers to the broad scope of legal consequences of wrongful acts, with "liability" reserved for its civil consequences (*responsabilité civile*), the obligation to provide reparation.[6]

[3] John M Kelson, 'State Responsibility and the Abnormally Dangerous Activity ' (1972) 13 *Harv Int'l L J* 197, 199-200.
[4] Renee S B Kool, '(Crime) Victim's Compensation: The Emergence of Convergence' (2014) 10(3) Utretch Law Review 14, 16.
[5] Ibid, 16.
[6] Ibid, 358; also, Scovazzi (n 7) 43. This is consistent with the original meaning of the terms: *responsibility* referring to the principle which imposes legal consequences on the author of wrongful acts (see John M Kelson (n 3) 199-200; also, Kool (n 4) 20).

Whilst in the common law these terms generally respect their precise definitions, this is not always the case with international documents. This might relate to both notions being encompassed by the same terms in civil law-rooted systems (e.g. *responsabilité, responsabilidad, responsabilidade,* or *responsabilità)*.[7] Within the ILC and other UN bodies, "responsibility" generally refers to the consequences of violations of international law, or wrongful acts, as discussed in the definition above. On the other hand, the term "liability" is often used when discussing the consequences of non-prohibited activities.[8] In the Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities, the ILC refers mostly to liability, emphasising the aspect of compensation for the consequences of non-wrongful activities, and distinguishing them from rules governing the responsibility of states.[9]

[7] Tullio Scovazzi, 'State Responsibility for Environmental Harm' (2001) 12 *YIEL* 43, 43; also, Julio Barboza, 'International Liability for the Injurious Consequences of Acts not Prohibited by International Law and Protection of the Environment' (1994) 250 *RDC* 291, 305; Alan Boyle, 'State Responsibility and International Liability for Injurious Consequences of Acts not Prohibited by International Law: A necessary distinction?' (1990) 39 *ICLQ* 1, 9. Scholars refer to both terms being used as broad synonyms in the past. See Mohammed Bedjaoui, 'Responsibility of States: Fault and Strict Liability' in Rudolf Bernhardt (ed), *Encyclopaedia of Public International Law* (Elsevier 1988), 358; also, L F E Goldie, 'Concepts of Strict and Absolute Liability and the Ranking of Liability in Terms of Relative Exposure to Risk' (1985) 16 *Netherlands Yearbook of International Law* 175, 180; also, ILC, 'International Liability for Injurious Consequences' (1980) II (1) *YILC* 248, 250.

[8] Barboza, 'International Liability…" (n 7) 305; Boyle, 'State Responsibility (n 7) 8-9; also ILC, 'International Liability for Injurious Consequences of acts not Prohibited' (1981) II(1) *YILC* 79 Un DOC A/CN.4/34, 250.

[9] ILC, '2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities' (2006) II (2) YILC 59 UN Doc A/CN.4/577, Add.1 and Add.2 (Principles on the Allocation of Loss), Preamble, Commentary 2, 5.

2. Responsibility of States for Transboundary Harm

The law of responsibility of states has been described as 'one of the most intricate chapters' of international law.[10] To scholars, this field of law is critical to the coherence of the international legal system,[11] and plays three important functions, namely deterring damage, correcting breaches and ensuring reparation.[12] This field of international law deals with situations where states act in breach of their international obligations, as defined in treaties and international customs. According to Dionisio Anzilotti, 'responsibility arises from the unjust violation of another's right and generates the obligation of reparation'.[13] In general, the nature of the breached rule, whether conventional or customary, does not affect the responsibility for its violation.[14]

According to the ARSIWA, 'every internationally wrongful act of a State entails [its] international responsibility'.[15] Wrongful acts by states happen when their acts do not conform with the conduct expected of them by the rules of international law.[16] This breach of a rule of international law, here

[10] F A Mann, *Further Studies in International Law* (Clarendon 1990), 124. A preliminary point to note is that, despite the reference to the responsibility "of states", the law also addresses wrongful acts of other entities with international personality, such as international organisations, and their consequences. See Anzilotti (n 2) 3-15; also, Alain Pellet, 'The Definition of Responsibility in International Law' in James Crawford *et al* (eds), *The Law of International Responsibility* (OUP 2010), 6; James Crawford, 'The System of International Responsibility' in Crawford *et al, The Law of International Responsibility* (OUP 2010), 17-18.
[11] Garane (n 2) 615-617.
[12] Rene Lefeber, *Transboundary Environmental Interference and the Origin of State Liability* (Kluwer 1996), 333-334.
[13] Dionisio Anzilotti, *Teoria Generale della Responsabilità Dello Stato Nel Diritto Internazionale Parte Prima* (Lumachi 1902), 76 and 102.
[14] Pierre-Marie Dupuy, 'Droit des traités, codification et responsabilité internationale' (1997) 43 *AFDI* 7, 11-20.
[15] ILC, ARSIWA (n 1) Article 1.
[16] Ibid, Chapter III, Commentary 3 and Article 1, Commentary 1.

referred to as “primary obligation”, creates new obligations between the parties, referred to as “secondary obligations”. Among these is the obligation to provide full reparation.[17] This secondary obligation consists of a new legal relationship between the parties.[18] The particularities of a wrongful act relate to the primary obligation, in our case, the preventive obligation (as discussed in the previous chapter), while the law of responsibility of states deals with the secondary obligation of reparation. As with other obligations, breaches of the preventive obligation lead to the obligation to provide reparation.[19]

In international law, only states can bring forward international claims of reparation. When damage results from acts of private parties undertaken within the territory of another state, states must bring these claims against the origin states.[20] But several reasons lead states to avoid international claims based on the law of responsibility of states.[21] This has led to the

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[17] Ibid, Part II, Commentary 1; also, Dionisio Anzilotti, ‘La responsabilité internationale des États à raison des dommages soufferts par des étrangers’ (1906) 13 *RGDIP* 2, 308; also, Rudiger Wolfrum, ‘Means of Ensuring Compliance and Enforcement of International Environmental Law’ (1998) 271 RDC 9, 82; Fitzmaurice, ’International Responsibility …’ (n 2) 1016; Pellet (n 10) 5; ILC, ‘Report of the International Law Commission on the work of its twenty-eighth session’ (1976) II(1) *YILC* 1 UN Doc a/cn.4/ser.a/1976/Add1, 46, Para 138 .

[18] Friedrich C V Savigny, *Sistema del Derecho Romano Actual Tomo IV* (Gongora 1879), 9; also, Daniel B Magraw, ‘The International Law Commission's Study of "International Liability"’ (1986) 80(2) AJIL 305, 308-317; Sergio Cavalieri Filho, *Programa de Responsabilidade Civil* (10 edn, Atlas 2012), 5. The secondary obligation has been described as a sanction in Humberto Theodoro Jr, *Comentarios ao Novo Codigo Civil Volume III* (Forense 2003), 18.

[19] Refer to Chapter 2.3.1.

[20] Christine Gray, *Judicial Remedies in International Law* (OUP 1987), 20. It should be noted, however, that private parties are also subject to duties and liabilities under international law (International Military Tribunal, (1947) I *Trial of Major War Criminals*, 223); see also ILC, ‘International Liability…’ [1981] (n 6) 120, Para 71.

[21] Tim Stephens, *International Courts and Environmental Protection* (CUP 2009), 68; also Gray, *Judicial Remedies* (n 20) 22; Malgosia Fitzmaurice and Catherine Redgwell, ‘Environmental non-compliance procedures and international law’ (2000) 31 *Netherlands Yearbook of International Law* 35, 37; Christian J Tams and James Sloan, in Christian J Tams and James Sloan (eds), *The Development of International Law by the International*

adoption of multiple treaties which regulate the reparation of transboundary damage where operators are responsible for damage resulting from their activities.[22] These agreements create so-called liability regimes and are intended to make the process of compensation simpler. They usually channel liability to the operators of activities - which are prone to cause damage - with claims to be resolved in domestic courts,[23] and will be further discussed in Chapter 5. However, even in areas where liability treaties have been adopted and are in force, the law of responsibility of states remains important.[24] In this area, the clarity of these rules serves not only to restrict disputes, but also to deter damage.[25] In this context, the law of state responsibility is the proper framework to address breaches of the preventive obligation, particularly where mitigation and damage remediation are concerned.[26]

The subtleties of the rules regarding prevention and reparation of environmental damage have led scholars to suggest the development a specific regime to discipline the subject,[27] to provide greater certainty in

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Court of Justice (OUP 2013) 4-5; also The Harvard Law Review, 'Developments in the Law' (1991) 104 *HLR* 1484, 1511-1512; Laurence B Chazournes, 'La Mise en Oeuvre du droit International dans le Domaine de la Protection de L'Environnement; Enjeux e D'efis' (1995) 1 RGDIP 37, 50; also Alexandre Kiss, '"Tchernobâle" ou la pollution Accidentelle du Rhin par des Produits Chimiques' (1987) 33 *AFDI* 719, 724.

[22] Fitzmaurice and Redgwell (n 21) 37. Examples of non-compliance regimes are present in the Montreal Protocol (Montreal Protocol on Substances that Deplete the Ozone Layer (adopted 16 September 1987, into force 1 January 1989) UNTS 1522 3, Article 8), the LRTAP Convention and its protocols (CoP Decision 1997/2 (1997) and CoP Decision 2012/25 (2012)), the Basel Convention (CoP Decision V/16, 'Mechanism for Promoting Implementation and Compliance of the Basel Convention', UNEP/CH.5/29 (10 December 1999)).

[23] Garane (n 2) 615-617; also, Leslie-Anne Duvic-Paoli, *The Prevention Principle in International Environmental Law* (CUP 2018), 330.

[24] Fitzmaurice and Redgwell (n 21) 37.

[25] Pierre-Marie Dupuy, 'Action Publique Et Crime International De L'Etat — A Propos De L'article 19 Du Projet De La Commission Du Droit International Sur La Responsabilité Des Etats' (1979) 25 *AFDI* 539, 544.

[26] Duvic-Paoli (n 23) 327-330.

[27] Garane (n 2) 645-643 and 636.

prevention and reparation.[28] However, states tend to resist the development of rules of responsibility given, among other factors, the possibility of themselves being in the position of defendants in future claims.[29] While the international legal system lacks a conventional regime regulating the subject, the role of scholars, international tribunals, and claims commissions remains particularly relevant to its clarification.[30]

2.1. Responsibility for Transboundary Damage in the Draft Articles on Responsibility of States for Internationally Wrongful Acts (ARSIWA)

On 7 December 1953, the ILC received from the UN General Assembly (UNGA), the mandate to undertake the codification and progressive development of the law governing the responsibility of states.[31] Both among governments and academics, the initiative was met with scepticism,[32] with some expressing concerns over the bureaucratization of international law.[33] Rather than codified, some believed that the subject would be better off left to continual legal development.[34]

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[28] Duvic-Paoli (n 23) 354.
[29] Garane (n 2) 608 and 617; also, UNGA 'The Stockholm Declaration on the Human Environment' Res 48/14 (1972) UN Doc A/CONF.48/14, Principle 21; Alexandre Kiss, 'Present Limits to the Enforcement of State Responsibility for Environmental Damage' in Francesco Francioni and Tullio Scovazzi (eds), *International Responsibility for Environmental Harm* (Graham and Trotman 1991), 8. To scholars, the absence of litigation following the Chernobyl nuclear plant disaster evidences the lack of will among states to develop the field. Refer to Sands (2 edn) (n 15) 870
[30] Boyle, 'Reparation for Environmental…' (n 2) 18; also, Garane (n 2) 636
[31] UNGA, 'Request for the Codification of the Principles of International Law Governing State Responsibility' Resolution 799 (VIII) UN Doc A/RES/798 (VIII) (7 December 1953); also, David D Caron, 'The ILC Articles on State Responsibility: The Paradoxical relationship Between Form and Authority' (2002) 96 (4) *AJIL* 858, 859.
[32] Daniel Bodansky and John R Crook, 'Introduction and Overview' 96 *AJIL* 773, 773.
[33] Philip Allott, 'State Responsibility and the Unmaking of International Law' (1988) 29 Harv Int'l L J 1, 1-10.
[34] Caron (n 31) 863-865.

Regardless, the Commission proceeded with the mandate, which it took several decades to complete. The first part was completed in 2001, when the ILC adopted the final text of the Draft Articles on Responsibility of States for Wrongful Acts (ARSIWA). The document expresses the equality of states before international law and their responsibility before an international legal order of their own making.[35] Firmly grounded in state practice and general principles of law,[36] the ARSIWA was generally well received among scholars.[37] Despite never having been adopted as a treaty, its provisions are considered significantly influential[38] and have the status of *soft law*.[39] In Article 31, the document provides for the obligation to provide full reparation "for the injury", which is defined as including 'any damage, whether material or moral, caused by the internationally wrongful act'.[40]

The ARSIWA did not intend to specify the contents of primary rules, such as the preventive obligation. Instead, it was generally devoted to breaches in general of primary obligations.[41] Accordingly, the document did not provide a definition of transboundary damage which is relevant for reparation purposes. However, with respect to transboundary damage to

[35] Edith B Weiss, 'Invoking State Responsibility in the Twenty-first Century' (2002) 96 (4) AJIL 773, 799.
[36] Caron, 'The ILC Articles…' (n 34) 863-865.
[37] Bodansky and Crook (n 31) 780; Caron, 'The ILC Articles…' (n 34) 859.
[38] Caron, 'The ILC Articles…' (n 34) 863-865.
[39] Alan Boyle and Christine Chinkin, *The Making of International Law: Foundations of Public International Law* (OUP 2007), 168-172; also Caron, 'The ILC Articles…' (n 34) 866; similarly, Bodansky and Crook (n 31) 775. To some, this character makes the Articles even more influential by avoiding the "dwarfing" process of a diplomatic conference, accession, and ratification process. Refer to Caron, 'The ILC Articles…' (n 34) 866; also, Martti Koskenniemi, 'Solidarity measures: State responsibility as a new international order?' (2002) 72(1) *BYIL* 337, 341
[40] ILC, ARSIWA (n 1) Article 31.
[41] ILC, ARSIWA (n 1) General Commentary, Para 4 and Article 31, Commentary 8.

the environment, commentaries suggest that it possibly constitutes relevant damage, deserving of reparation. Commentaries to the Articles refer to a concept of harm which includes damage to the environment and natural resources,[42] which 'will often extend beyond […] clean-up-costs or property devaluation'.[43] According to its commentaries, damages to environmental values are 'no less real and compensable than damage to property'.[44] Overall, despite lacking a definition of transboundary damage, its provisions and commentaries suggest that states may be, to some extent, responsible for transboundary environmental damage, including at least some environmental values.

It should be noted that the ARSIWA express both the codification and promotion of progressive development of the law, which may be conflicting objectives.[45] While part of the Articles is firmly grounded in precedents, expressing a codification effort, some of its provisions represent an attempt at progressive development of the law. However, it is not always clear which part represents codification and progressive development.[46]

[42] Ibid, Commentary 10 and Article 35, Commentary 14.
[43] Ibid, Article 36, Commentary 15.
[44] Ibid, Ibid.
[45] Yifeng Chen, 'Between Codification and Legislation: a Role for the International Law Commission as an Autonomous Law-Maker' in --, *Seventy Years of the International Law Commission* (Brill 2020), 244-245; also, Wouter Werner, 'The Making of Lawmaking' in Nico Krish and Elzi Yildiz (eds), *The Many Paths to Change in International Law* (OUP 2023), 131.
[46] James Crawford, *State Responsibility: The General Part* (CUP 2013), 43, 401, and 472; also, Alain Pellet, 'The ILC's Articles on State Responsibility for Internationally Wrongful Acts and Related Texts' in James Crawford et al (eds), *The Law of International Responsibility* (OUP 2010), 86-88.

3. Wrongful Acts and Their Attribution to a State

3.1. Attribution to a State of Wrongful Acts which Emanate from State Agents: Fault-Based Responsibility

As discussed, wrongful acts by states consist of their acts in violation of international law. These acts lead to state responsibility and to the obligation to provide reparation.[47] Before appreciating the legality of an act of a state, it is important to assert whether the act is attributable to the state. As formal entities, states are incapable of acting by themselves; for this purpose, they depend on natural persons called agents. Rules of attribution define which acts of natural persons are attributable to states. These rules are described in Chapter II of the ARSIWA. Essentially, acts attributable to states emanate from their agents or organs.[48]

To be considered wrongful, an act attributable to a state requires fault or lack of due diligence. Generally, acts are wrongful insofar as they result from a failure of the concerned state to behave diligently when it could have done so.[49] As a result, the prevailing view regards state responsibility as fault-based or subjective.[50] This means that, in principle,

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[47] Pierre-Marie Dupuy, 'Le Fait Générateur de la Responsabilité Internationale des États' (1986) 188 *RDC* 13, 71-79.

[48] ILC, ARSIWA (n 1) Chapter II; also, James Crawford, *State Responsibility: The General Part* (CUP 2013), 113.

[49] L F E Goldie, 'Liability for Damage and the Progressive Development of International Law' (1965) 14 *ICLQ* 1189; also L F E Goldie, 'International Principles of Responsibility for Pollution' (1970) 9 Colum J Transnat'l L 283, 283; Louis B Sohn and R R Baxter, 'Responsibility of States for Injuries to the Economic Interests of Aliens' (1961) 55(3) *AJIL* 548, Article 1-3; M J L Hardy, 'Nuclear Liability: The General Principles of Law and Further Proposals' (1960) 36 *BYIL* 223, 226-227; Boyle, 'State Responsibility…' (n 7) 15. On due diligence, see Smith (n 59) 36-48. On the attribution of the unlawful act, see Dupuy, 'Le Fait Générateur…' (n 47) 26-36; also, Ago (n 62) 492; ILC, 'International Liability…' [1981] (n 6) Para 43-48 and 146; Barboza, 'International Liability…" (n 7) 326; ILC, ARSIWA (n 1) Article 3, Commentary 7. For prevention as an obligation of means or result, refer to Chapter 3, section 3; also, Crawford, *State Responsibility…* (n 48) 220-226.

[50] Luigi Condorelli and Claus Kress, 'The Rules of Attribution: General Considerations' in in Crawford *et al, The Law of International Responsibility* (OUP 2010), 224. There are few exceptions to these rules, one of which is defined in the Convention on International Liability for Damage Caused by Space Objects (adopted 29 March 1972, in force 1

diligent behaviour excludes wrongfulness, and therefore the responsibility of a state.[51]

3.2. Attribution to a State of Wrongful Acts as a Result of the Behaviour of Private Parties

An important aspect of transboundary damage relates to the fact that it frequently arises as a result of the behaviour of private persons who carry out activities which are not directly related to the state. In principle, these are not acts of the state, and the state should not be responsible for them.[52] However, in terms of transboundary damage, the role of private parties assumes particular relevance. Private enterprises carry out most economic activity worldwide. Many of these activities are potentially harmful. In some cases, these dangerous activities are harmful to the environment of their host state, as well as to other states. It is important to establish under which conditions states are held responsible for transboundary damage caused in this context.

September 1972). On this, refer to Kelson (n 6) 200; Garane (n 2) 622-626; Wilfred Jenks, 'Liability for Ultra-Hazardous Activities in International Law' (1966) 117 *RDC* 105, 106 and 126.

[51] ILA Study Group, 'First Report' (n 61) 27; also Alan Boyle and David Freestone, *International Law and Sustainable Development: Past Achievements and Future Challenges* (OUP 1999), 76: 'A state which complies with all these requirements… will not be responsible for harm, which nevertheless results…'; also Nicolas de Sadeleer, 'The Principles of Prevention and Precaution in International Law: Two heads of the same coin?' in Malgosia Fitzmaurice, *Research Handbook in International Law* (Edward Elgar 2010), 182. The unlawful conduct can be materially positive (an act) or negative (an omission or non-action): see Anzilotti 'Teoria Generale...' (n 17) 113. One of the peculiarities of transboundary environmental harm is that this damage more often results, not from a material wrongful act of the state, but from by an omission, a violation of the obligation to *abstain* from causing harm. See Roberto Ago, 'Le Delit International' (1939) 68 *RDC* 416, 505.

[52] ILC, ARSIWA (n 1) Chapter 2, Commentary 3.

In principle, the conduct of third parties is not attributable to states.[53] Notwithstanding, in some cases, the acts of private parties might be attributed to a state. This happens, for example, when they act under the instructions of the state,[54] or when the state has authorised their activity.[55] Indeed, states are expected to exercise a certain degree of control over the activities of third parties within their territories, to ensure that their actions do not cause significant harm beyond their territories. As discussed in the previous chapter,[56] this rule was expressed in the *Trail Smelter case (United States v Canada),*[57] where the arbitral tribunal found that states have an obligation to ensure that the acts of private parties operating within their territory do not cause damage to the territory of other states. A breach of this obligation leads to the responsibility of the host state to provide reparation.[58] This results in the duty of states to regulate and, if necessary, prohibit or significantly limit certain behaviours in order to prevent this sort of damage beyond their boundaries.[59] As in the *Trail Smelter case,* failing to do so may entail their obligation to bear the consequences of the acts of private parties operating within their territory.[60]

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[53] ILC, ARSIWA (n 1) Chapter 2, Commentary 3
[54] ILC, ARSIWA (n 1) Article 8
[55] ILC, ARSIWA (n 1) Article 8, Commentary 2
[56] Refer to Chapter 2, Section 3(a)
[57] *Trail Smelter arbitration (US v Canada)* [1938] RIAA III 1905 (*Trail Smelter arbitration*)
[58] Ibid*,* 1963-1965. Refer to Chapter 2, section 3
[59] Ralph C d'Arge and Allen V Kneese, 'State Liaiblity for International Environmental Degradation: an Economic Perspective' (1980) 20 (3) *Natural Resources Journal* 427, 436; also, Gunther Handl, 'State Liability for Accidental Transnational Environmental Damage by Private Persons' (1980) 74 *Am J Int'l L* 525, 530; Brian D Smith, *State Responsibility and the Marine Environment: The Rules of Decision* (Clarendon 1988), 41-42
[60] Jaye Ellis, 'Has International Law Outgrown Trail Smelter' in Rebecca M Bratspies and Russell A Miller (eds), *Transboundary Harm in International Law* (CUP 2006), 60

Scholars agree on the responsibility of states for failing to regulate the acts of private parties within their jurisdictions, which creates for them an obligation to provide reparation.[61] However, when the conducts of these parties result in transboundary damage, it is not always clear whether a state was aware of their activities and whether it acted diligently to prevent them from causing damage to other states. In these situations, it appears from the case law that their responsibility is not strictly fault based.[62] For example, in the *Trail Smelter* arbitration, the *Corfu Channel case (UK v Albania),*[63] and the *Lac Lanoux Arbitration (Spain v France),*[64] tribunals were flexible in the demonstration of the origin state's fault. As a result, states appear to function as guarantors of private conducts carried out within their jurisdictions.[65] Scholars have also questioned the strictly fault-based approach,[66] particularly regarding damage from ultra-hazardous acts, such as the use of nuclear power.[67]

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[61] Jenks (n 61) 216-217; Tim Stephens, *International Courts and Environmental Protection* (2009), 158; ILA Study Group on Due Diligence in International Law, 'First Report' (2014) (available at http://www.ila-hq.org/index.php/study-groups?study-groupsID=63) accessed 2 June 2020; *contra* Dionisio Anzilotti, 'La Responsabilite Internationale…' (n 17) 286-288; Joanna Kulesza, *Due Diligence in International Law* (Brill 2016), 16

[62] Goldie, 'International Principles…' (n 49) 306; Goldie, 'Liability for Damage…' (n 49) 1200; *contra*, Hardy (n 49) 229-230. For an extensive discussion about the subjective element (*la faute, le dol, la faute stricto sensu* and *diligence*) of the tort, see Ago (n 51) 450-498; also, Barboza, 'International Liability…" (n 7) 327

[63] *Corfu Channel case (United Kingdom of Great Britain and Northern Ireland v Albania)* (Merits) [1949] ICJ Rep 4, 18

[64] *Lac Lanoux Arbitration (Spain v France)* (1957) 12 *RIAA* 281, 316

[65] ILC, 'International Liability…' [1981] (n 6) 115 Para 54

[66] Alan Boyle, 'Making the Polluter Pay? Alternatives to State Responsibility in the Allocation of Transboundary Environmental Costs' in Francesco Francioni and Tullio Scovazzi (eds), *International Responsibility for Environmental Harm* (Graham and Trotman 1991), 364-365

[67] Giorgio Bosco, 'Some Remarks on the Settlement of Environmental Disputes' in Francesco Francioni and Tullio Scovazzi (eds), *International Responsibility for Environmental Harm* (Graham and Trotman 1991), 181

3.3. The Proposal of a Regime of Strict Liability of States

During its study on the law of responsibility of states, the ILC became particularly concerned with the gravity and likelihood of transboundary damage resulting from non-prohibited but nonetheless dangerous activities. As a result, the Commission proposed the development of international law, with the adoption of a conventional regime to regulate their consequences. The proposed regime would provide strict but limited liability of states for harm resulting from these activities.[68] The proposal would lead to transboundary damage being regulated differently according to its context, with a set of conventional rules regulating damage from these sources.[69] The law of responsibility of states would remain residually, and apply to the consequences of wrongful acts.[70]

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[68] ILC, 'First Report on the Legal Regime for Allocation of Loss in Case of Transboundary Harm Arising Out of Hazardous Activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' UN Doc A/CN.4/531 (2003), Para 1.

[69] UNGA Res 91/98 (1976) UN Doc A/RES/31/1 (21 September 1976); also, ILC, 'Report of the Working Group on international liability for injurious consequences arising out of acts not prohibited by international law' [1978] II *YILC* 150, Para 25; also, ILC, 'International Liability…' [1981] (n 20) 115 Para 52-56 .

[70] ILC, 'Report of the Commission to the General Assembly' (1973) II *YILC,* 169; also, Dupuy, 'Le Fait Générateur…' (n 47) 62. See also ILC, 'Report of the Working Group' (2002) UN Doc A/CN.4/L.627, Para 3; Barboza, 'International Liability…" (n 7) 309; ILC, '2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities' (2006) II (2) *YILC* 59 UN Doc A/CN.4/577, Add.1 and Add.2 (Principles on the Allocation of Loss), Principle 4, Commentary 12; ILC, ARSIWA (n 1) General Commentary 5; Barboza, 'International Liability…" (n 7) 302-312; ILC, 'International Liability…' [1981] (n 6) 117 Para 58-67; ILC, 'Report of the International Law Commission on the Work of its Forty-eight session' (1996) II(2) *YILC* 1 UN Doc A/61/10 (1996 Report), 100-104; Boyle, 'State Responsibility (n 7) 2-7. *Contra,* Louise de La Fayette, 'The ILC and International Liability: A Commentary' (1997) 6(3) *RECIEL* 322, 323-325; also Riccardo Pisillo-Mazzeschi, 'Forms of International Responsibility for Environmental Harm' in Francesco Francioni and Tullio Scovazzi (eds), *International Responsibility for Environmental Harm* (Graham and Trotman 1991), 26. See also Alan Boyle, 'Globalising Environmental Liability: The Interplay of National and International Law' in (2005) 17 *Journal of Environmental Law* 3, 24; Alan Boyle, 'Codification of International Environmental Law and the International Law Commission: Injurious Consequences Revisited' in Alan Boyle and David Freestone (eds) *International Law and Sustainable Development: Past Achievements and Future Challenges* (OUP 1999), 73; Mark A Drumbl, '*Trail Smelter* and the International Law Commission's Work on State Responsibility for Internationally Wrongful Acts and State Liability ' in Rebecca M Bratspies and Russell A Miller (eds), *Transboundary Harm in International Law* (CUP 2006), 87; Magraw (n 18) 309 and 316; Garane (n 2) 622-626; Birnie *et al* (n 61) 223.

Arguably, this would also allow the development of an insurance industry,[71] offering expeditious compensation to victims of transboundary damage.[72]

The proposal was not well-received either among states[73] or scholars.[74] Respected academics pointed out that it created confusion between the wrongful character of activities and harm arising from them. In fact, in breaches of the preventive obligation, the wrongfulness is not necessarily related to that of its origin,[75] with most breaches resulting from lawful activities.[76] Critics also disagreed with the proposal of a limited liability system where victims might not be fully compensated.[77] This resistance led the ILC to abandon the proposal of a dual system.[78] Later, this branch

[71] Jenks (n 61) 107.
[72] Ibid, 43, Para 146; Dupuy, 'Le Fait Générateur…' (n 47) 73.
[73] ILC, 'First Report on the Legal Regime for Allocation of Loss in Case of Transboundary Harm Arising Out of Hazardous Activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' UN Doc A/CN.4/531 (2003), Para 22; 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?' (2005) 14(3) *RECIEL* 265, 272; also, Chazournes (n 21) 42.
[74] Stephens (n 21) 156.
[75] ILC, 'First Report on the Legal Regime…' (n 73) Para 17.
[76] Clyde Eagleton, 'Measure of Damages in International Law' (1929) 39(1) TYLJ 52, 52; de La Fayette, 'The ILC and…' (n 70) 323-327; Ian Brownlie, *State Responsibility* (Clarendon 1983), 86; Birnie *et al* (n 61) 214. Taking a different view, Jenks called for development of a general liability law for hazardous activities, stating that '[there] is nothing inherently impossible or unreasonable in the concept of a general liability in international law for ultra-hazardous activities'. Jenks (n 61) 176-177; similarly, considering the proposal an advance, refer to Gray, *Judicial Remedies* (n 20) 223.
[77] de La Fayette, 'The ILC and…' (n 70) 323; also, Tarcisio H Reis, *Compensation for Environmental Damages under International Law: The Role of the International Judge* (Kluwer 2011), 106. Juxtaposing the principle of full reparation, the Commission suggested a principle according to which 'the victim of transboundary harm should not be left to bear the entire loss' (ILC, 'Report of the International Law Commission on the Work of its Forty-eight session' (n 70) 100). However, it should be noted that this move was made in the spirit of liability regimes, which is to 'spread more fairly the possible consequences of improbable but potentially disastrous misadventure'. The idea is to provide some degree of redress by the provision of insurance by operators. Jenks (n 61) 107.
[78] Pierre-Marie Dupuy, *'Où Est le Droit International de L´Environnement à la Fin du Siècle?´* (1997) 4 *RGDIP* 873, 883; also, Duvic-Paoli (n 23) 327. Still, the Commission progressed in the study of the preventive obligation (ILC, 'First Report on the Legal

of study led to the adoption within the ILC of the Draft Principles on the Allocation of Loss. That document suggests the adoption by states of general principles for the compensation of transboundary losses that occur even in situations where the preventive obligation may not have been breached.[79]

4. The Principle of Full Reparation and Transboundary Damage to the Environment

As discussed, the breach of an international obligation creates a secondary obligation of reparation between the wrongdoer and the victim state. This secondary obligation is a legal fiction which aims to re-establish the violated legal system[80] by restoring the victim to its original *legal* position.[81] That is, it aims to *legally undo* the wrongful act.[82] In addition, reparation should, as far as possible, restore the previous material situation.[83]

According to the principle of full reparation, a state responsible for a wrongful act has the obligation to re-establish the pre-existing material condition of the victim state. This principle was expressed in the *Factory*

Regime…' (n 73) Para 33) and its consequences in these situations (ILC, 'Report of the International Law Commission on the work of its fifty-fourth session' (2002) (II)2 *YILC* 1, Para 442). This study resulted in the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, adopted in 2001 ((2001) II(2) *YILC* 148) (Articles on Prevention), and the Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities ((2001) II(2) YILC 148.

[79] Draft Principles (n 78) Preamble, Commentary 5-8.

[80] Friedrich CV Savigny, *Sistema del Derecho Romano Actual Tomo VI* (Gongora 1879), 18.

[81] Ibid, 10.

[82] ILC, 'Sixth report on the content, forms and degrees of international responsibility' (1985) II(1) *YILC* 3 UN Doc A/CN.4/389, Commentary 8 and 12 to Article 6.

[83] Caio M da S Pereira, *Instituicoes de Direito Civil Vol I* (24 edn, Forense 2011), 554; also, ARSIWA (n 1) Article 35, Commentary 5.

at Chorzów case,[84] where the PCIJ expressed that the responsible state has a duty to provide *full reparation*, which is defined as re-establishing the victim state to its previous position.[85] Subsequent precedents have confirmed this rule.[86] It should be noted that, in international law, even where private parties are affected by a wrongful act, reparation is owed to the victim state. It is up to the latter to distribute it to affected parties, as required.[87]

The previous chapter discussed the obligation of prevention, defined as the obligation to take steps to prevent damage beyond a state's borders, and its expression in the case law. This includes harm to the natural environment of other states.[88] However, some scholars have expressed doubts about reparation for damage to the environment *itself* as a result of these breaches.[89] They have highlighted concerns about the definition of what damage is relevant and deserves reparation, and whether damage to the natural environment fits within this definition even when the affected resources have no evident economic value.[90] The International Court of Justice (ICJ) summarised these concerns in the

[84] *Case Concerning the Factory at Chorzów (Germany v Poland)* (Merits) PCIJ Rep Series A No 17
[85] *Factory at Chorzów* (n 84) 47. See also the *Iron Rhine Arbitration (Belgium v Netherlands),* Award of 24th May 2005, [2005] PCA ICGJ 373, Para 59.
[86] *Ahmadou Sadio Diallo (Republic of Guinea v Democratic Republic of the Congo),* Judgment, [2010] II ICJ Rep 691, Para 161; also, *Gabcikovo-Nagymaros Project (Hungary v Slovakia),* Judgment 1997 ICJ Rep 80, Para 15.
[87] ILC, 'Third report on State responsibility, by Mr. James Crawford, Special Rapporteur' UN Doc A/CN.4/507, Para 19.
[88] Refer to Chapter 2, section 3.
[89] Kiss and Shelton, 'Systems Analysis…' (n 2) 61-62.
[90] Michael Bowman *et al*, *Lyster's' International Wildlife Law* (CUP 2010), 53.

Gabcikovo-Nagymaros case when it recognised 'the limitations inherent in the very mechanism of reparation of this type of damage'.[91]

This section will discuss the evolution of the subject in some of the most relevant cases in international arbitration, to reveal the consequences of the breach of the preventive obligation.

4.1. The Principle of Full Reparation in General

a) Full Reparation as Expressed in the *Norwegian Shipowner's Claims (Norway v US)*[92] and *Factory at Chorzow Case (Germany v Poland)* [93]

According to the principle of full reparation, states responsible for wrongful acts are expected to provide the complete reparation of the damage to which they have contributed. Reparation is considered full when it places the harmed party in a condition as if it had not been injured. The principle of full reparation is at the core of our social organisation,[94] having been expressed in most legal systems,[95] as well as in international law.[96] In the *Norwegian Shipowner's Claims,* the PCIJ expressed it as an obligation to provide *just compensation* based on loss of profits, aiming to achieve '*a complete restitution of the status quo ante*'.[97] Similarly, in the *Factory at Chorzow (Germany v Poland),* the PCIJ resumed the widely accepted standard of reparation in international law:

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[91] *Gabcíkovo–Nagymaros Case* (n 86) 140.
[92] *Norwegian Shipowners' Claims (Norway v USA)* (1922) I *RIAA* 307.
[93] *Factory at Chorzów (Germany v Poland)* (Merits) 17 PCIJ Rep Series A 47 (*Factory at Chorzow*).
[94] Joseph Pieper, *The Four Cardinal Virtues* (Helen and Kurt Wolff 1965), 78.
[95] Pereira (n 83) 554.
[96] Gray, *Judicial Remedies* (n 20) 8.
[97] Ibid, 338.

> […] reparation must, as far as possible, wipe out all the consequences of the illegal act and reestablish the situation which would, in all probability, have existed if that act had not been committed. Restitution in kind, or, if this is not possible, payment of a sum corresponding to the value which a restitution in kind would bear; the award, if need be, of damages for loss sustained which would not be covered by restitution in kind or payment in place of it […].[98]

The principle of full reparation, as outlined in the *Factory at Chorzow case,* is solidified in the case law.[99] However, these cases did not assess whether the principle applies to transboundary damage or the natural environment. More specifically, the primary question is whether damage to the environment *itself* fits with the concept of damage conceived by the PCIJ.[100] In addition, if affirmative, how would a state perform its reparation in material terms?

4.2. The Principle of Full Reparation and Transboundary Damage

a) Reparation in the *Trail Smelter Arbitration (United States v Canada)*[101]

The previous chapter discussed the *Trail Smelter arbitration* insofar as it found the obligation of states to abstain from causing harm to the

[98] *Factory at Chorzów* (n 84) 47. See also, *Iron Rhine Arbitration (Belgium v Netherlands)* (Award of 24th May 2005) [2005] PCA ICGJ 373, Para 59.
[99] *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v Nicaragua)* (Compensation, Judgment) [2018] ICJ Rep 15 (*Certain Activities*, Compensation, Judgment), Para 30.
[100] Michael Bowman et al (n 90) 53.
[101] *Trail Smelter* (n 57)

environment of other states.[102] This sub-section will discuss the consequences breaches of this duty, the concept of relevant damage for reparation purposes, and its reparation. The *Trail Smelter* was the first dispute concerning an obligation to provide reparation for a breach of the preventive obligation.[103] In the dispute, the Government of the United States of America claimed compensation for damage to its territory as a result of the activity of a smelter in the Canadian Territory.[104] As a result, the US claimed reparation, including "cleared and uncleared land", livestock, property, businesses,[105] and the Columbia River's waters.[106]

In the *Trail Smelter award*, the tribunal found that Canada was under an obligation to provide compensation for damage in the territory of the United States where it resulted from the smelter's activity. The tribunal found that its emissions were responsible for damage to farmland in the territory of the US. In these situations, it provided compensation on the basis of 'reduction in the value of use or rental value of the land', 'reduction in crop yield', or reduction in the value of the land.[107] Where the harm affected "cleared land" which was not used for crops, compensation consisted of the diminution in rental value.[108] The award also found damage to forests (which were referred to as "uncleared land"). In those cases, it awarded compensation based on the reduction in value of the

[102] Refer to Chapter 2, section 3.
[103] DH Dinwoodie, 'The Politics Of International Pollution Control: The *Trail Smelter Case* 1938 Report' (1972) 27 (2) *International Journal* 219, 219.
[104] *Trail Smelter* (n 57) 1911.
[105] Ibid, 1920.
[106] Ibid, 1931-1932.
[107] Ibid, 1925-1926.
[108] Ibid, 1926.

land as a result of timber losses.[109] Finally, the tribunal dismissed the claim of compensation for damage to the Columbia River for lack of evidence.[110]

One of the recurrent difficulties with compensation of environmental damage respects the frequent uncertainty surrounding the extent and value of the losses. In the *Trail Smelter*, the tribunal found that these uncertainties were not reasonable grounds to deny compensation. In an often-quoted passage, the arbitral tribunal stated that:

> Where the tort itself is of such a nature as to preclude the ascertainment of the amount of damages with certainty, it would be a perversion of fundamental principles of justice to deny all relief to the injured person.[111]

Although it rejected claims based on 'mere speculation or guess', the award stated that 'it will be enough if the evidence shows the extent of the damages as a matter of just and reasonable inference', that is, compensation based on an approximate assessment.[112]

The *Trail Smelter* arbitration is often described as being overly focused on financial and property losses.[113] An assessment of the arbitration

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[109] Ibid, 1928.
[110] Ibid, 1932.
[111] Ibid, 1921.
[112] Ibid, 1921.
[113] Alfred P Rubin, 'Pollution by Analogy' in Rebecca M Bratspies and Russell A Miller (eds), Transboundary Harm in International Law (CUP 2006), 54; also, Christopher Sellers, 'Three Eras of Environmental Concern' (2018) 1 *Modern American History* 363, 363-366; also, Esa Konttinen, 'Four Waves of Environmental Protest' in Esa Konttinen et al (eds), *All Shades of Green* (SoPhi 1999), 30-31; also, Austen L Parrish, 'Sovereignty's Continuing Importance' in Rebecca M Bratspies and Russell A Miller (eds), *Transboundary Harm in International Law* (CUP 2006), 186

compromis reveals that the primary focus of the parties was to reveal whether Canada was under the obligation to abstain from causing harm in the territory of the United States,[114] and the consequences of its past and future breaches.[115] Its award clarified the preventive obligation as part of customary international law. It also revealed that its breaches lead to a secondary obligation to provide reparation.[116] However, the arbitration did not go deep into the debate on whether these obligations extend to all aspects of natural environment, particularly where it is devoid of evident economic expression, as well as its values.[117]

b) The *Gut Dam Arbitration (US v Canada)*[118]

The *Gut Dam arbitration* concerned reparation for damage resulting from the construction of a dam on Lake Ontario, particularly due to its effects on the lake's water levels.[119] As with the *Trail Smelter,* the *compromis* shows the focus of the arbitration was on damage to and losses of property.[120] As a result, the US-Canada Lake Ontario Claims Tribunal provided compensation for property damage to property to several

[114] Canada-United States Convention for Settlement of Difficulties Arising from Operation of Smelter at Trail, BC (adopted 15 April 1935, into force 3 August 1935), Article 3, (2).
[115] Ibid, Article 3, (1) and (4).
[116] *Trail Smelter* (n 57) 1963-1965; also, Sands and Peel (n 73) 714; also Shelton D, 'Righting Wrongs: Reparations in the Articles of State Responsibility' (2002) 96 (4) *AJIL* 831, 845; also Boyle, 'Reparation for Environmental…' (n 2) 17-22; ILC, ARSIWA (n 1) Article 31.
[117] Rubin (n 113) 53-54; also, Kiss and Shelton, 'Systems Analysis…' (n 2) 61-62.
[118] Canada-US Lake Ontario (Gut Dam) Arbitration Agreement (Adopted 25 March 1965) (1965) 4 ILM 468.
[119] Ibid, 468.
[120] Ibid, 469.

citizens.[121] The dispute later ended in a settlement, with Canada agreeing to pay a further US$350,000 in compensation.[122]

4.3. Full Reparation and Transboundary Damage to the Natural Environment

The previous cases clarified the obligations of states to abstain from causing transboundary damage and its reparation. However, the discussions of the parties in those arbitrations were primarily focused on transboundary damage to property. In the next decades, states increasingly questioned whether the obligation of full reparation extended to pure environmental damage in the territory of other states.

a) Compensation for Clean-up Costs: *Cosmos 954 (Canada v USSR)*[123]

The first dispute addressing this particular aspect followed an incident involving the Cosmos 954 Soviet satellite in the 1970s. After its unexpected re-entry into the Earth's atmosphere, the satellite's debris crashed in a remote area of Canadian territory, resulting in widespread radioactive contamination. This led the Canadian government to present a claim of compensation for clean-up costs and damage to its natural environment.[124] The USSR accepted liability for losses resulting from the

[121] Report of the Agent of the United States (1968) 8 ILM 118, 133.
[122] Ibid, 140.
[123] *Claim Against the Union Of Soviet Socialist Republics For Damage Caused By Soviet Cosmos 954* (1979) 18(4) ILM 899 (Cosmos 954).
[124] Edward G Lee and D W Sproule, 'Liability for Damage Caused by Space Debris: The Cosmos 954 Claim' (1988) 26 *Can YB Int'l* L 273, 273; also, William J Broad, 'Canada Wants Cash for Cosmos 954 Cleanup' (1979) 4381(203) *Science* 632, 633; Alexander F Cohen, 'Cosmos 954 and the International Law of Satellite Accidents' (1984) 10 *Yale J Int'l L* 78, 78-79; Lisa R Rand, 'Falling Cosmos: Nuclear Re-entry and the Environmental History of Earth Orbit' (2019) 24 *Environmental History* 78, 94; *Cosmos 954* (n 123) 899.

incident. However, its government disagreed that it extended to damage to the natural environment.[125]

The claim ended in a settlement where the Soviet Union agreed to pay C$3 million in compensation, which amounted to roughly half of Canada's original claim.[126] Commentators have noted that, by Soviet standards, the agreement involved the payment of an unusually large sum. The agreement may suggest that, at that point, states were starting to accept responsibility for some aspects of damage to the environment of other states, particularly with reference to the costs resulting from the need to clean-up the environment from ultra-hazardous materials, such as radioactive debris.[127]

b) Restoration of the Natural Environment: *The Phosphate Lands Case (Nauru v Australia)* [128]

The obligation of reparation for damage to the natural environment of a foreign state was at the centre of the debates of the *Phosphate Lands case.* The dispute concerned the damage to the territory of Nauru as a result of phosphate mining which was undertaken in its territory back when the country was under the UN Trusteeship System. The activity,

[125] Cohen (n 124) 84-86; and Lee and Sproule (n 124) 273, 276.
[126] Canada—Union Of Soviet Socialist Republics: Protocol On Settlement Of Canada's Claim For Damages Caused By "Cosmos" 954" (adopted 2 April 1981 into force 2 April 1981) (1981) 20(3) ILM 689.
[127] Cohen (n 124) 88-89. Generally, refer to Alan Boyle, 'Remedying Harm to International Common Spaces and Resources: Compensation and Other Approaches' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 89-91.
[128] *Certain Phosphate Lands in Nauru (Nauru v Australia) (Judgment)* [1992] ICJ Rep 240 (*Phosphate Lands*), 1-5.

which took place for decades, left such extensive damage to the environment of the island state that it rendered most of the Nauruan territory virtually unfit for occupation.[129] As a result, on 19 May 1989, the Nauruan Government filed an application to the ICJ seeking reparation, among others, for damage to its natural environment.[130]

To Nauru, Australia was under an obligation to make 'appropriate reparation', for the damage to which it contributed within the Nauruan territory.[131] This included the restoration of areas of wilderness to a 'reasonable condition for habitation'.[132] The claim included a request for compensation for the costs of reinstatement of the natural environment.[133] Shortly after the Court decided on its jurisdiction to adjudge the case,[134] the parties settled the claim with an agreement to pay AU$107 million in compensation for the damage caused to the Nauruan territory.[135]

c) Reparation of Environmental Damage in the United Nations Compensation Commission

Up until that point, scholars believed that, despite the general recognition of the obligation of states to prevent damage to the environment, there

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[129] Ibid, 14-15.
[130] Ibid, Para 1-10.
[131] Ibid, Para 5.
[132] *Certain Phosphate Lands in Nauru (Nauru* v. *Australia)* (Application Instituting Proceedings), available on < https://www.icj-cij.org/public/files/case-related/80/6653.pdf>, accessed 2 February 2020, Para 49.
[133] Ibid, 14-15.
[134] *Certain Phosphate Lands in Nauru (Nauru v. Australia), Preliminary Objections, Judgment* [1992] ICJ Rep 240, Para 55 and 72.
[135] Settlement Of The Case In The International Court Of Justice Concerning Certain Phosphate Lands In Nauru (adopted 10 August 1993) (1993) 32(6) ILM 1471, 1474-1475. Generally, refer to Antony Anghie, 'The Heart of My Home: Colonialism, Environmental Damage, and the Nauru Case' (1993) 34 *Harv Int'l L J* 445, 483; also, Ramon E Reyes Jr, 'Nauru v. Australia: The International Fiduciary Duty and the Settlement of Nauru's Claims for Rehabilitation of Its Phosphate Lands' (1996) 16 *NYLSJICL* 1, 32; M Rafiqul Islam, 'The Dispute between Nauru and Australia over Rehabilitation: A Test Case for Economic Self-Determination' (1992) 8 *Queensland U Tech LJ* 147, 158.

was still uncertainty over an obligation to provide reparation for these losses.[136] However, the years that followed were prolific in the clarification of the subject. In the 1990s, the unlawful Iraqi invasion of Kuwait resulted in widespread damage to the environment of Kuwait and other states in the region.[137] This led the international community to face the problem of wrongful acts that result in damage to the environment and its compensability.

As a result, the United Nations Security Council (UNSC) instituted the United Nations Compensation Commission (UNCC) with competence, among other things, to rule on the Iraqi obligation to provide reparation for this sort of damage resulting from the war.[138] The UNCC's awards of reparation for damage to the environment were published in the early 2000s. They contained an in-depth study of the subject, providing the clarification of the responsibility of states for damage to the environment of other states. It also considered the adequate form for the reparation of this sort of damage. For its importance, the Commission and its most important awards will be discussed in a separate chapter.[139]

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[136] Kiss and Shelton, ', 'Systems Analysis…' (n 89) 61-62; also, Boyle, 'Remedying Harm…' (n 127) 89-91.
[137] Samira A S Omar *et al*, 'The Gulf War impact on the Terrestrial Environment of Kuwait: An Overview' in Jay E Austin and Carl E Bruch (eds), *The Environmental Consequences of War* (CUP 2000), 317; also, Mahmood Y Abdulraheem, 'War-Related Damage to the Marine Environment in the Rome Sea Area' in Jay E Austin and Carl E Bruch (eds), *The Environmental Consequences of War* (CUP 2000), 341. Refer to Chapter 6.
[138] UNSC Res 687 (3 April 1991) UN Doc S/RES/687, generally; also Hans van Houtte *et al*, 'The United Nations Compensation Commission', *in* Pablo de Greiff (ed) *The Handbook of Reparations* (OUP 2006), 324; also Low and Hodgkinson (n 9) 456.
[139] Refer to Chapter 6

d) Recent Cases Before the International Court of Justice

The publication of the UNCC's final awards on damage to the environment and its reparation coincided with a wave of renewed interest in the subject on the part of states. Their publication was followed by several disputes concerned, at least in part, with the responsibility of states for damage to the natural environment and its reparation. The first of these was the *Aerial Herbicide Spraying case (Ecuador v Colombia)*[140] which ended with a settlement which included the payment of a substantial sum in compensation.

The dispute was followed by several others with similar reparation claims for damage to the environment. In this respect, two jointly judged cases were particularly relevant. In the *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v Nicaragua),*[141] the ICJ settled the question of the responsibility of states for damage to the environment of other states, and their obligation to provide material reparation. The Court found that the *principle of full reparation* is compatible with the obligation to provide full reparation for damage to the natural environment, stating that:

> It is consistent with the principles of international law governing the consequences of internationally wrongful acts, including the principle of full reparation, to hold that compensation is due for damage caused do the environment, in and of itself, in addition to

[140] *Aerial Herbicide Spraying Case (Ecuador v Colombia)* (Order of 13 September 2013) [2013] ICJ Rep 278 (*Aerial Herbicide*)
[141] *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v Nicaragua)* (Compensation, Judgment) [2018] ICJ Rep 15 (*Certain Activities*, Compensation, Judgment)

expenses incurred by an injured state as a consequence of such damage.[142]

The judgment was shortly followed by the award of the *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v Uganda).*[143] In the award, the Court found that Uganda was responsible for damage to the environment and natural resources of the Congo, which led to its obligation to provide reparation.[144] The latter cases confirmed the responsibility of states for damage to the environment of other states, and for reparation for damage to their environment and natural resources. For their relevance and complexity, these developments will be discussed in Chapter 7.[145]

4.4. Full Reparation and Damage to the Commons: *The Barcelona Traction Case (Belgium v Spain)* [146]

The latter cases clarified the responsibility of states and their obligation to repair the environment of other states. Despite not being the focus of this thesis, it is worth mentioning that they do not add much to this damage affecting the global commons. In this aspect, the ruling in the *Barcelona Traction case* deserves to be mentioned. The dispute discussed the consequences of breaches to *erga omnes* obligations, which are obligations owed to the international community as a whole. The award

[142] Ibid, Para 41.
[143] *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v Uganda)* (Judgment) [2005] ICJ Rep 168.
[144] Ibid, Para 69-79.
[145] Refer to Chapter 7, section 3.
[146] *Barcelona Traction, Light and Power Company (Belgium v Spain)* (Judgment) [1970] ICJ Rep 3, Para 33.

held that, in such cases, the importance of the rights violated justifies the standing of all concerned states to seek remediation. The Court found that,

> an essential distinction should be drawn between the obligations of a State towards the international community as a whole, and those arising vis-à-vis another State in the field of diplomatic protection. By their very nature the former are the concern of all States. In view of the importance of the rights involved, all States can be held to have a legal interest in their protection; they are obligations *erga omnes*.[147]

The ARSIWA later expressed this rule in its Article 48, where it regulates the consequences of breaches of obligations owed to groups of states or to the international community as a whole. In these cases, any of the concerned states may invoke the responsibility of the state which practiced the wrongful act.[148] To scholars, this results in the entitlement of all states to seek the responsibility of other states and the reparation for damage to the environment of common areas as a result of wrongful acts.[149] Other scholars have remarked that this ruling might become increasingly relevant in future, as states turn their attention to damage to the global commons resulting, for instance from the dumping of nuclear waste in the oceans.[150]

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[147] Ibid, Para 33.
[148] ARSIWA (n 1) Article 48.
[149] Malgosia Fitzmaurice, 'The International Court of Justice and International Environmental Law' in Christian J Tams and James Sloan (eds), *The Development of International Law by the International Court of Justice* (OUP 2013), 357.
[150] Edith B Weiss, 'Invoking Sate Responsibility in the Twenty-first Century' (2002) 96 (4) *AJIL* 773, 803-804.

This section discussed the principle of full reparation in international law as a general rule, and its path to consolidation in international law. The *Trail Smelter* case clarified its applicability to damage to the territory of other states, at least insofar as the damage concerned property losses. However, most of these cases provided little clarification on the reparation of transboundary damage to the natural environment. The section revealed that, in successive international claims, states challenged the reparability of this sort of damage. More recently, some awards acknowledged the responsibility of states for transboundary damage affecting the environment and their obligation to provide its reparation. At this stage, there is little doubt of this responsibility and of the reparability of this sort of damage. However, providing its material and meaningful remediation remains a problem, which will be the topic of the next section.

5. Remedies

As discussed in previous sections, reparation aims to *legally undo* the wrongful act of a state. In addition, where possible, it should include the restoration of pre-existing material conditions, including of the natural environment. However, where the transboundary damage affects the environment, it remains to be established the preferred manner of remediation. Reparation is provided through the use of *legal remedies.*[151] Courts arbitrate the appropriate remedy in accordance with a balance

[151] Anzilotti 'Teoria Generale...' (n 17) 81.

between ‘the seriousness of the violation and injury’ and the ‘quality and quantity of reparation’.[152] The remedies traditionally used in international law are restitution, or *restitutio in integrum,*[153] compensation or damages, and satisfaction.[154] This section will assess how these remedies can be used to provide redress for environmental damage.

5.1. Restitution

Restitution consists of the return of that which has been taken away or lost. The scholarly literature refers to two different definitions or standards of restitution. The first, expressed in the *Factory at Chorzow case,* aims to ‘reestablish the situation which would, in all probability, have existed if that act had not been committed’.[155] The definition aims to establish a hypothetical state, and therefore encompasses the losses of profits as a result of the original harm. The second notion, provided for in the ARSIWA, aims to re-establish ‘as far as possible […] the situation which existed prior to the commission of the internationally wrongful act’.[156] In this sense, restitution broadly encompasses the actions adopted by the responsible state which aim to re-establish the pre-existing situation.[157] Regarding environmental damage, however, scholars tend to prefer the former definition, which accounts for foreseeable changes in the

[152] ILC, ‘Preliminary report on State Responsibility’ (1988) II(1) *YILC* 6 UN Doc A/CN.4/416, Para 103.
[153] *Factory at Chorzow* (n 84) 47.
[154] Mann (n 10) 125; also, Gray, *Judicial Remedies* (n 20) 10-20.
[155] *Factory at Chorzow* (n 84) 47; also, ILC, ‘Preliminary Report on State Responsibility’ (1988) (n 152) Para 64-67.
[156] ILC, ARSIWA (n 1) Article 35, and Commentary 1.
[157] Ibid, Article 35, Commentary 5.

environment in respect to its baseline state, if the damage had not occurred.[158]

The ARSIWA provides that restitution is the adequate remedy as long as it remains reasonable and proportionate.[159] This, among other factors,[160] contributes to its seldom use in the context of transboundary damage.[161] For example, in the *Forests of Central Rhodope case (Greece v Bulgaria)*[162] the award did not rule on the return of the forests to their conditions before the wrongful act, but instead on compensation based on market prices of lost resources.[163] Similarly, in the *Gabcikovo-Nagymaros case,* the ICJ did not agree on the restitution of 'the fauna, the flora, the soil, the sub-soil, the groundwater and the aquifer' to their previous state.[164]

5.2. Compensation

Compensation aims to restore the pre-existing situation of the injured party by the payment of a sum which should reflect the financial value of the losses,[165] 'including loss of profits'.[166] The ARSIWA provides that the

[158] Boyle, 'Reparation for Environmental…' (n 2) 23; Birnie *et al* (n 61) 226; also Fitzmaurice, 'International Responsibility …' (n 2) 1018. This option can be balanced with the provision of Article 35(2) for compensation for loss of profits. See ILC, ARSIWA (n 1) Article 35 (2).
[159] ILC, ARSIWA (n 1) Art 34, Commentary Para 5, 7, and 11.
[160] Sands and Peel (3rd ed) (n 115) 715.
[161] Gray, *Judicial Remedies* (n 20) 10-20; also Clyde Eagleton (n 76) 53; Garane (n 2) 614; Fitzmaurice, 'International Responsibility …' (n 2) 1019; also Birnie *et al* (n 61) 226.
[162] *Forests of Central Rhodope Arbitration (Greece v Bulgaria)* (1933) III UNRIAA 1405.
[163] Ibid, Para 103.
[164] *Gabcíkovo–Nagymaros Case* (n 86) Page 71-87, Para 127-141.
[165] *Factory at Chorzow* (n 84) 48.
[166] ILC, ARSIWA (n 1) Article 35; also, Shelton (n 116) 851. In the *Gabcikovo-Nagymaros case,* the ICJ found 'a well-established rule of international law that an injured State is

remedy is adequate to address financially assessable damage[167] Despite opinions to the contrary,[168] the provision does not appear to represent an obstacle to its use to address environmental damage. In fact, a study of the provision's drafting reveals that it was re-drafted from its original terms specifically to make compensation compatible with damage to the environment, including the extinction, for example, of wildlife species that are not considered economically relevant.[169]

Despite the absence of significant obstacles to the compensation of environmental damage, practice suggests some uncertainty on its calculation to reflect environmental losses, particularly in the case of irreparable ones. One of the adequate solutions that has been discussed is the use of equivalents.[170] The ILC considered the adequacy of this choice during its study on the responsibility of states,[171] when it considered it primarily useful to address the 'total destruction of a certain component, to the introduction of an equivalent component'.[172] For example, the Lugano Convention provides for the extinction of species.

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entitled to obtain compensation from the State which has committed an internationally wrongful act for the damage caused by it'. See *Gabcíkovo–Nagymaros Case* (n 86) Para 152; also ILC, 'State Responsibility' (1956) II *YILC* 173, Para 197. On compensation for lost environmental values, see Wetterstein, 'A Proprietary…' (n 2) 48.

[167] ILC, ARSIWA (n 1) Article 35.

[168] Bjorn Sandvik and Satu Suikkari, 'Harm and Reparation in International Treaty Regimes: An Overview' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 64-65; also Boyle, 'Reparation for Environmental…' (n 2) 24; cf Scovazzi (n 70) 65.

[169] ILC, 'Report of the International Law Commission on the work of its fifty-second session, 1 May - 9 June and 10 July - 18 August 2000, Official Records of the General Assembly, Fifty-fifth session, Supplement No.10' (2000) II (2) YILC 1, UN Doc A/55/10, Para 193.

[170] Garane (n 2) 614.

[171] ILC, 'Preliminary Report on State Responsibility' (1988) (n 152) Para 24 and 116; cf Wetterstein, 'A Proprietary…' (n 2) 48.

[172] ILC, 'Eleventh Report on International Liability for Injurious Consequences Arising out of Acts Not Prohibited by International Law' (1995) UN Doc. A/CN.4/468, 57 Para 26.

In these cases, the treaty provides for the introduction of "equivalent" species in the environment.[173] More generally, commentaries to the ARSIWA remark that compensation 'may sometimes take the form […] of other forms of value'.[174]

In environmental damage, compensation generally consists of the payment of a sum that will cover the loss insofar as possible. Practice suggests that the sum may cover the costs with investigation, case preparation,[175] precautionary, and clean-up measures.[176] Commentaries to Article 36 of the ARSIWA refer to pollution containment and remediation costs.[177] Also, importantly, compensation might encompass the financial cost of restoring the environment to its previous conditions.[178] This form of compensation has been provided by virtually all treaties dealing with the subject since the mid-1980s.[179]

After the extensive environmental damage caused during the withdrawal of Iraqi troops from Kuwait during the 1990s, the United Nations Environmental Programme (UNEP) created a Working Group of Experts to consider the compensation for this sort of damage. In its final report,

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[173] de La Fayette, 'The Concept of…' (n 173) 182.
[174] ILC, ARSIWA (n 1) Article 36 Commentary 4.
[175] Phoebe Okowa, *State Responsibility for Transboundary Air Pollution in International Law* (OUP, 2000), 193. In the *Trail Smelter* arbitration, the tribunal did not award preparation costs. Refer to *Trail Smelter arbitration* (n 57) 1959. More recently, in the *Certain Activities case*, the ICJ awarded compensation for the cost of aerial images of the affected area. Refer to *Certain Activities*, Compensation, Judgment (n 142) Para 91-106.
[176] Okowa, State Responsibility (n 175) 193; also, Sands and Peel (3rd edn) (n 115) 715.
[177] ILC, ARSIWA (n 1) Article 36, Para 15.
[178] *Certain Activities*, Compensation, Judgment (n 142) Para 87.
[179] E.g. 1984 Protocol To Amend The International Convention On Civil Liability For Oil Pollution Damage 23 ILM 177 (adopted 25 May 1984, not into force) (1984 Protocol to the 1969 CLC), Article 2(3) and International Convention on Civil Liability for Oil Pollution Damage (1992 CLC) (adopted 27 November 1992, into force 30 May 1996) (1997) 1956 UNTS 285, Article I(6).

the Working Group concluded that compensation should include the costs associated with restoration, subject to the reasonableness and cost-effectiveness of any proposed measures.[180] As a result, compensation for restoration costs became mainstream in UNCC environmental claims[181] and the primary emphasis of the Commission's environmental awards.[182] More recently, in the *Certain Activities case*, the ICJ asserted the compensability of environmental damage in international law.[183] The award clarified that this included the cost of restoring areas of wilderness to their original state, in addition to losses of 'goods and services' provided by the environment.[184]

5.3. Satisfaction

Satisfaction addresses the political or moral harm suffered by a state in its honour and dignity as a result of a wrongful act.[185] It is a suitable remedy, for example, to address attacks on a state's territory, agents, official residences, and flag.[186] Generally, satisfaction consists of a

[180] UNEP Working Group of Experts, 'Conclusions by the Working Group of Experts on Liability and Compensation for Environmental Damage Arising from Military Activities' in Alexandre Timoshenko (ed), Liability and Compensation for Environmental Damage: Compilation of Documents (UNEP 1998), Para 49-58.
[181] Michael T Huguenin et al, 'Assessment and Valuation of Damage to the Environment' in Cymie R Payne and Peter R Sand (eds), *Gulf War Reparations and the UN Compensation Commission: Environmental Liability* (OUP 2011), 87.
[182] UNCC Governing Council Panel of Commissioners, 'Report And Recommendations Made By The Panel Of Commissioners Concerning Part One of the Fourth Instalment Of "F4" Claims' (9 December 2004) UN Doc S/AC.26/2004/16, Para 50; UNCC Governing Council Panel of Commissioners, 'Report And Recommendations Made By The Panel Of Commissioners Concerning the Fifth Instalment of "F4" Claims' (30 June 2005) UN Doc S/AC.26/2005/10 (Fifth Instalment), Para 80-81.
[183] *Certain Activities* (Compensation, Judgment) (n 142) Para 42.
[184] Ibid, Para 42-43.
[185] Eric Wyler and Alain Papaux, 'The different forms of Reparation: Satisfaction' in James Crawford *et al* (eds), *The Law of International Responsibility* (OUP 2010), 625.
[186] Gray, *Judicial Remedies* (n 20) 42.

nominal redress,[187] such as a declaration of wrongfulness,[188] an apology, discontinuation and guarantees of non-repetition,[189] court decisions,[190] dismissal or punishment of guilty officials.[191] With the nature of an apology, scholars debate whether satisfaction represents reparation *stricto sensu*.[192]

In some cases, satisfaction may include monetary payments to the wronged party.[193] To some commentators, in this case, the remedy has a punitive nature, being therefore distinct from payments by way of compensation.[194] Compensation addresses the reparation of material or moral harm to the state's property, citizens, or agents.[195] In contrast, when satisfaction involves the payment of sums, the payment addresses the moral harm suffered by the state and represents reparation for a non-material damage,[196] serving as an amend to the harmed state.[197] Insofar

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[187] Boyle, 'Reparation for Environmental…' (n 2) 25; Contra, PM Dupuy has noted that 'The fact that it is purely normative does not mean that satisfaction should be regarded as a minor form of reparation. Quite the reverse', and that the purpose of international litigation is having a wrongful conduct declared so, and the responsible publicly 'named and shamed'. See, Pierre-Marie Dupuy, 'A Crime Without Punishment' (2016) 14 *Journal of International Criminal Justice* 879, 891.
[188] Wyler and Papaux (n 185) 631.
[189] ILC, 'Second Report on the Content, Forms and Degrees of International Responsibility (1981) II (1) *YILC* 79 Un DOC A/CN.4/344, Article 4(3); also, ILC, 'Fourth report on the content, forms and degrees of international responsibility' (1983) II (1) YILC 3 UN Doc A/CN.4/366, Para 17.
[190] Ian Brownlie, Remedies in the International Court of Justice in Vaughan Lowe and Malgosia Fitzmaurice (eds), *Fifty Years of the International Court of Justice* (CUP 1996), 563; also, Eibe Riedel, 'Satisfaction' in Rudolf Bernhardt (ed), *Encyclopedia of Public International Law 10: States* (Elsevier Science 1988), 384.
[191] ILC, 'State Responsibility' [1956] (n 166) Para 199.
[192] Ibid, 193-195, Para 21.
[193] ILC, 'International Responsibility: Sixth Report' (1961) II *YILC* 1 UN Doc A/CN.4/134 (1961 Report), Para 74; ILC, 'Preliminary Report on State Responsibility' (1988) (n 152) Para 21; also, ILC, 'State Responsibility' (1956) II *YILC* 173, Para 199; Gray, *Judicial Remedies* (n 20) 42.
[194] Wyler and Papaux (n 185) 631.
[195] Christine Gray, 'The Different Forms of Reparation: Compensation' in James Crawford *et al* (eds), *The Law of International Responsibility* (OUP 2010) 604; ILC, 'Second Report on State Responsibility' (1989), Para 9 and 19.
[196] ILC, ARSIWA (n 1) Commentary 4.
[197] ILC, 'State Responsibility' [1956] (n 166) Para 200.

as damage to the environment results in moral damage to the state, satisfaction may be an acceptable remedy, but the remedy will not aim to re-establish the pre-existing material situation.[198] In the *Certain Activities and Construction of a Road case*, material environmental restoration was addressed through compensation, with satisfaction reserved for other aspects of the wrongful act that did not consist of material damage. In the award, the remedy consisted of a Court declaration of the wrongful acts of the parties.[199]

5.4. Punitive Damages

Punitive damages are sanctions or penalties on the wrongdoer. Domestic legal systems reserve sanctions for particularly serious wrongful acts. In the common law, punitive damages are reserved for serious infractions;[200] whether this is the case with international law is debatable. To Dionisio Anzilotti, the law of responsibility of states is solely concerned with reparation and does not involve punishing states.[201] In contrast, Special Rapporteur Roberto Ago argued that reparation and sanctions can coexist, adding to the restoration of the violated right.[202] Similarly, Special Rapporteur Garcia-Amador remarked some cases where courts

[198] ILC, 'Second Report on State Responsibility' (1989) UN Doc A/CN.4/425, Para 9-12.
[199] *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, Para 139 and 224.
[200] Gray, *Judicial Remedies* (n 20) 26.
[201] Anzilotti 'Teoria Generale...' (n 17) 96; also, Anzilotti, 'La Responsabilite Internationale…' (n 17) 308. See also Pierre-Marie Dupuy, 'Dionisio Anzilotti and the Law of International Responsibility of States' (1992) 3 *EJIL* 139, 147.
[202] Ago (n 62) 429; see also George Nolte, '*The Classical International Law of State Responsibility'* (2002) 13 *EJIL* 1083, 1093.

arbitrated punitive damages.[203] Similarly, ILC reports cite examples of state practice where these led to exemplary, vindictive, or punitive damages.[204]

Although international responsibility traditionally has a civil[205] as opposed to criminal or repressive character,[206] in theory, punitive damages are admissible.[207] This has led some scholars to call for the development of a system for the criminal responsibility of states for acts against the vital interests of the international community.[208] During the study on the responsibility of states, Special Rapporteur Ago proposed the provision of international crimes, among which were included acts against the conservation of common resources.[209] The proposal would result in a criminal regime of states[210] with peremptory rules defined as international crimes, the practice of which would result in penalties.[211] Given the

[203] ILC, 'State Responsibility' [1956] (n 192) 183 Para 50 and 212 Para 207; also, ILC, 'State Responsibility' (1957) II *YILC* 104 UN Doc A/CN4/SER.A/1957/Addl, 105 Para 2.
[204] ILC, 'International Responsibility: Sixth Report' (1961) II *YILC* 1 UN Doc A/CN.4/134 (1961 Report), Para 5; also, ILC, 'Preliminary Report on State Responsibility' (1988) (n 152) Para 21.
[205] Pellet (n 10) 12.
[206] Nolte (n 202) 1093; also, ILC, 'Report of the Commission to the General Assembly' (1973) II *YILC* 161 UN Doc A/CN.4/SER.A/1973 (1973 Report), 174, Para 5.
[207] Clyde Eagleton (n 76) 61-64; also Gray, *Judicial Remedies* (n 20) 26; also ILC, 'State Responsibility' [1956] (n 166) Para 20; also, ILC, 'Preliminary Report on State Responsibility' (1988) (n 152) Para 5-17**;** ILC, 'State Responsibility' [1956] (n 166) Para 202.
[208] Gray, *Judicial Remedies* (n 20) 210-217 and footnote 11; also, Okowa, *State Responsibility* (n 175) 208-209; Koskenniemi (n 39) 340; ILC, 'Report…' [1976] (n 17) 26, Para 80, 31 Para 97-101 and 54 Para 155 (for an evolution of the subject, see Para 122-145).
[209] ILC, 'Report…' [1976] (n 17) 54 Para 155.
[210] J Combacau and D Alland, 'Primary and Secondary Rules in the Law of State Responsibility: Categorizing International Obligations' (1985) 16 *NYIL* 82; ILC, 'State Responsibility' [1956] (n 166) para 155.
[211] Malgosia Fitzmaurice, 'Liability for Environmental Damage Caused to the Global Commons' (1996) 5(4) *RECIEL* 305, 307.

reluctance of states regarding its development,[212] the final Draft Articles did not define these acts.[213] This has been referred to as the *depenalization* of state responsibility.[214] Despite still including an entire chapter on serious breaches of obligations to the international community,[215] the final draft of the ARSIWA refrained from defining penalties for their breach.[216]

Among scholars, there are those who defend defining penalties for particularly serious acts against the interests of the international community, including deliberate environmental damage.[217] Others, however, remark on the difficulties of imposing such sanctions,[218] and most consider their imposition incompatible with state sovereignty.[219] Moreover, for practical reasons, such as the lack of compulsory adjudication,[220] imposing criminal penalties on states is considered unlikely.[221] In the *Prevention and Punishment of the Crime of Genocide,*

[212] Karin Mickelson, 'Rereading Trail Smelter' in Rebecca Bratspies and Russell Miller (eds) *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (CUP 2006), 83; also, Koskenniemi (n 39) 340.
[213] James Crawford, 'The ILC's Articles on Responsibility of States for Internationally Wrongful Acts: A Retrospect' (2002) 96 *AIJIL*, 875.
[214] James Crawford, 'International Crimes of States' in James Crawford *et al* (eds), *The Law of International Responsibility* (OUP 2010), 410.
[215] ILC, ARSIWA (n 1) Article 40-41.
[216] Stephan Wittich, 'Punitive Damages' in James Crawford *et al* (eds), *The Law of International Responsibility* (OUP 2010), 784.
[217] Okowa, *State Responsibility* (n 175) 208-209.
[218] Shelton (n 116) 845.
[219] James Crawford and Simon Olleson, 'The Nature and Forms of International Responsibility' in Malcolm D Evans (ed*) International Law* (OUP 2003), 451; also, Clyde Eagleton (n 76) 64.
[220] Hans Kelsen, 'Compulsory Adjudication of International Disputes' (1943) 37 AJIL 397, 397-399; also Stephens (n 21) 69; Gray, *Judicial Remedies* (n 20) 22; also, Charles de Visscher, *Theory and Reality in Public International Law* (PUP 1968), 376-381; Hersch Lauterpacht, *The Function of Law in the International Community* (OUP 2011), 3-4.
[221] Hans Kelsen, *Principles of International Law* (Rhinehart 1952) 20-23; also, Wittich (n 216) 674

the ICJ recently hinted favourably at the possibility of state crimes.[222] However, it did not acknowledge their criminal responsibility, in what was described as a "second death" of state crimes.[223] Finally, it is worth mentioning that, nonetheless, some Security Council and General Assembly resolutions are said to have performed *quasi-criminal* functions, condemning the imposition of sanctions of a punitive nature on states,[224] declaring the illegality of their conducts, or providing reparation.[225]

5.5. Specific Remedies for Environmental Harm

Given the peculiarities of environmental damage,[226] some scholars consider traditional remedies unsuitable for its reparation.[227] Some have suggested the development of specific remedies to address the growing commitments to environmental protection.[228] However, neither the ARSIWA nor the Principles on the Allocation of Loss address this issue.[229] Given the developments in the use of compensation to address these losses in the last few decades, specific remedies for environmental

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[222] *Case Concerning Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia Herzegovina v Serbia and Montenegro)* (Judgement) [2007] ICJ Rep 43, Para 189.
[223] Dupuy (n 187) 880.
[224] ILC, 'Report…' [1976] (n 17) 34, para 105.
[225] UNSC Res 687 (3 April 1991) UN Doc S/RES/687.
[226] Boyle, 'Reparation for Environmental…' (n 2) 22.
[227] Boyle, 'Reparation for Environmental…' (n 2)24-25; also, Noah Sachs, 'Beyond the Liability Wall: Strengthening Tort Remedies in International Environmental Law' (2008) 37 *UCLA Law Review* 837, 840; also De La Fayette, 'The Concept of…' (n 173) 183-185; Larraine Wilde, 'Scientific and Technical Advice' in Christopher Gibson *et al* (eds), *War Reparations and the UN Compensation Commission Designing Compensation after Conflict* (OUP 2015), 71.
[228] Boyle, 'Reparation for Environmental…' (n 2) 25.
[229] ILC, ARSIWA (n 1) Article 34 and Commentary 2; also Birnie *et al* (n 61) 225; also Boyle 'Reparation for Environmental…' (n 30) 22.

damage do not appear to be strictly necessary at this stage. Instead, it seems preferable to states to negotiate on the discipline of the use of currently available ones to address environmental losses.

5.6. Remedies for Environmental Values

The next step is to assess whether and how to address losses of environmental values. Providing reparation for the diminution in instrumental values should not represent a particular problem. Instrumental values are human uses or appreciation of the environment. For example, the instrumental value of a beach or park resides in its aesthetic, amenity, and recreational values. When such an area is damaged as a result, for example, of an oil spill, the human population is deprived of these interests. Traditionally, reparation revolves around these values, with traditional remedies, such as compensation, being generally fit to redress these losses.

Regarding nature's intrinsic value, matters become more complex. Intrinsic values reflect the value of some natural resources for themselves, such as the effects on species populations and diversity. Some of these species might be endangered, such as turtles that may use the area as a breeding ground. Regarding individual beings, such an event will cause suffering to those beings which are sentient. These are just a few examples of nature's intrinsic values that can be affected by environmental damage. Accordingly, commentaries to the ARSIWA

clarify that states have an obligation to provide compensation for losses of non-use values, among which is biodiversity.[230]

Ethicists disagree on whether we are capable of providing reparation for the loss of intrinsic values, and whether this can morally be done. Some scholars doubt that we can ever account for the loss of intrinsic values. They emphasise that reparation should not be an excuse for destroying or replacing nature with an environment centred on human interests.[231] Some of them highlight that man-made changes to ecosystems are generally detrimental to their integrity,[232] and note the unforeseen and possibly devastating consequences of human manipulation of the environment.[233] Accordingly, restoring ecosystems to their original state is described as difficult or impossible. As a result, to these scholars, the best approach would be to let the environment heal itself through natural recovery, by "leaving it alone" without human interference.[234]

In contrast, some ethicists believe that, given the inevitability of environmental damage,[235] the one and only moral human behaviour to account for it is the restoration of the environment to its previous situation. It has been said that landscape restoration 'implies returning a site to some previous state, with the species richness and diversity and physical,

[230] ILC, ARSIWA (n 1) Article 36, Commentary 15; see also ILC, 'Report of the International Law Commission on the Work of its 53rd Session' (2001) II (2) *YILC* 1 UN Doc. A/56/10 (2001 Report), 101.
[231] Mark Cowell, 'Ecological Restoration and Environmental Ethics' (1993) 15(1) *Environmental Ethics* 19, 19; also, Christian Gamborg and Peter Sandoe, *The Ethics of Ecological Restoration* (CUP 2009), 219.
[232] Eugene Hargrove, *Foundations of Environmental Ethics* (Prentice-Hall 1989), 138.
[233] Leopold (n 160) 205.
[234] Cowell (n 231) 23.
[235] Cowell (n 231) 19.

biological, and aesthetic characteristics of that site' before the harmful event.[236] Other ethicists express the viewpoint, according to which, denying the morality of reparation is comfortable for wrongdoers.[237] As a result, a group of authors in the field propose the restoration of natural values, preventing their definitive loss and the continuous reduction in nature's value. They harmonise these values with human interests, requiring, for example, the restoration of areas devastated by mining. This is described as "saving the pieces" by creating or expanding habitats for their survival.[238] This view is expressed in the recent case law, as discussed in the previous chapter.

To conclude, among ethicists who consider a moral alternative to environmental damage, they defend environmental restoration. Falk suggests that restoration should not be seen as "re-creating" the past or turning back nature's clock but as a means to ensure that biological processes can heal and restore their self-sufficiency, to the point that they will no longer need human intervention.[239] Ethicists defend it as long as it does not intend to create "falsified" versions of nature that appeal to humans and to the extent that it does not serve as an excuse for tolerating additional damage.[240] As seen, there are two approaches to the reparation of environmental values: leaving nature alone, through natural

[236] Darrel Morrison, 'Landscape Restoration in Response to Previous Disturbance' in Monica G. Turner (ed), *Landscape Heterogeneity and Disturbance* (Springer 1987), 160.
[237] Donald Worster, 'The Anti-Management Revolt' (1985) 3 *Ecological Restoration* 5, 5-6.
[238] Cowell (n 231) 25.
[239] Don Falk, 'Discovering the Future, Creating the Past: Some Reflections on Restoration' (1990) 8(2) *Restoration and Management Notes* 71, 71.
[240] Cowell (n 231) 31.

recovery, and environmental restoration. When the option is restoration, it should be directed at promoting the healing of harmed ecosystems.[241]

6. Conclusion

This chapter discussed the responsibility of states for breaches of the duty to prevent damage to the environment of other states and their obligation to provide reparation. The focus was on revealing the alternatives available in the law that provide material reparation which contributes to the recovery of the natural environment, contributing to the achievement of long-term sustainable development.

This discussion revealed that breaches of the preventive obligation lead to a secondary obligation to provide full reparation. It is not always simple to accommodate the peculiarities of environmental damage with traditional remedies. However, this chapter revealed the accommodation of traditional remedies to provide material reparation which results in material benefit to the harmed environment – thus contributing to the maintenance of the global state of natural systems. As a result, reparation should materially restore the environment to its pre-existing situation through the use of the legal remedies available in international law either in isolation or in combination. However, it is not straightforward how remedies can effectively address particular environmental losses, such as that of environmental values.

[241] Gamborg and Sandoe (n 231) 231.

This chapter closes the first part of the thesis. Part I discussed how environmental values are a part of the concept of environment, both as a fraction and an expression of the environment. It presented the obligation of states to prevent harm to the environment of other states. It then revealed the responsibility of states to provide reparation for its breaches, although it is not always clear how to use remedies to provide full reparation. The second part of this thesis comprises chapters 5, 6, and 7, which will investigate international law to reveal the extent of relevant transboundary damage and how its reparation has been addressed in international law. It will start by reviewing the definition of relevant damage and how international agreements provide for its reparation.

PART II

INTERNATIONAL AGREEMENTS AND PRACTICE ON TRANSBOUNDARY ENVIRONMENTAL DAMAGE AND ITS REPARATION

'[the] contemporary concept of harm arguably encompasses […] the intrinsic value of the environment'.[1]

Malgosia Fitzmaurice

The first part of this thesis started by discussing the idea of environmental values as part of the concept of environment and proposed that these values are, at least to some extent, part of the concept of environment of states. After briefly addressing the preventive duty of states, the thesis then progressed to discuss the need for meaningful reparation following its breaches. Building upon that analysis, the second part of this thesis will assess sources of international law which somehow address our subject to reveal the extent to which states owe reparation for transboundary damage to the environment and its values.

In the *Continental Shelf case*, the ICJ noted that the adoption of multilateral treaties may play an essential role in clarifying the state of international law and its development.[2] The repeated adoption of similar provisions across multiple treaties may express the view of their parties

[1] Malgosia Fitzmaurice, 'International Responsibility and Liability' in Daniel Bodansky, Jutta Brunnée, and Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (1st edn, OUP 2008), 1015.
[2] *Continental Shelf (Libyan Arab Jarnahiriya v Malta)* 1985 ICJ Rep 29, Para 27.

and their expectations[3] about how certain themes should be regulated. Having this in mind, the second part of the thesis will begin by investigating the concept of relevant transboundary damage and its reparation by assessing treaties that provide for it. Particularly, it will assess a group of treaties that regulate liability for transboundary damage resulting from hazardous activities.

This group of treaties include different provisions on transboundary damage and its consequences. Some of them also provide alternatives for the reparation of transboundary environmental damage. However, their definitions of relevant damage and its reparation may vary. The focus of this investigation will be to reveal what elements of transboundary environmental damage their parties consider relevant, and whether their concepts of "damage" extends to the environment *itself*.

As a note of caution, it should be recalled that most liability regimes do not provide for state responsibility. Instead, they regulate the liability of the parties responsible for undertaking particularly risky activities. Still, this group of international agreements represents some of the best legal sources on what states have agreed to represent relevant transboundary damage and how to perform its reparation. They are possibly the best evidence of what states have agreed to be relevant transboundary damage and how it should be repaired. To Peter Wetterstein, there may be an "interspersion" between private and state liability for transboundary

[3] Cf ILC, 'Survey of liability regimes relevant to the topic of international liability for injurious consequences arising out of acts not prohibited by international law (international liability in case of loss from transboundary harm arising out of hazardous activities), prepared by the Secretariat' UN Doc A/CN.4/543, Para 6.

damage, notably given the decades-long efforts of the ILC in trying to bridge this gap.[4]

Another limitation of this analysis results from the limited number of parties in some of these agreements, and from the fact that most of them are not yet in force. Finally, this chapter will refrain from assessing treaties which provide for the prevention of transboundary or environmental damage without regulating its reparation,[5] or which regulate environmental damage which is not transboundary.[6]

1. International Agreements with Limited Concepts of Damage

From the mid-20th century, the earliest international agreements on the reparation of transboundary damage reflected the growing concern of humankind with the potential risk of this damage resulting from the use of new technologies perceived as increasingly dangerous. These earliest treaties focused on ensuring compensation for potential victims of damage resulting from some of the most recent technologies. The first activities to raise the alarm for fear of being excessively dangerous were the use of nuclear energy and space exploration. At that stage, states managed to agree on concepts of damage and compensation models

[4] Peter Wetterstein, 'Introduction' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 2.
[5] E.g. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (adopted 16 June 1972, into force 5 October 1978) 1108 UNTS 151, Article 1 and 2. Another example is the Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol 1) (adopted 8 June 1977 into force 7 December 1979) 1125 UNTS 3, whose Article 35 provides a prohibition of the use of methods of war which cause severe damage to the natural environment.
[6] E.g. Convention on Wetlands of International Importance, especially as Waterfowl Habitat (adopted 2 February 1971, in force 21 December 1975) 996 UNTS 245 (Ramsar Convention), Article 4.

which ensured at least some level of redress to the affected persons and property within their territories as a result of foreign acts.

1.1. Transboundary Damage from Nuclear Sources

One of the first activities to spark an intense debate on their potential to cause large-scale harm beyond a state's boundaries was the use of nuclear energy. Humanity was astonished by the public display of the power of atomic energy when two nuclear weapons were dropped in the Japanese cities of Hiroshima and Nagasaki during the Second World War. Despite its destructive power, in its early stages, the international community appeared optimistic over the use of nuclear energy for peaceful purposes. This led to the creation of the International Atomic Energy Agency (IAEA) to regulate and spread the use of nuclear power in the hope for affordable energy, with 'peace, health and prosperity throughout the world'.[7] The foundation of the IAEA contributed to the quick dissemination of the use of nuclear energy across the world.[8]

However, the optimism over nuclear energy would not last long,[9] as concerns arose soon after a leak at the Sellafield nuclear reactor, in the United Kingdom in 1957. Despite no victims or severe damage being reported,[10] the US Atomic Energy Commission ordered an investigation

[7] Statute of the International Atomic Energy Agency (adopted 26 October 1956, into force 29 July 1957) 276 UNTS 3988, Article II.
[8] M J L Hardy, 'Nuclear Liability, The General Principles of Law and Further Proposals' (1960) 36 *Brit Y B Int'l L* 223, 223.
[9] Hardy (n 8) 224.
[10] William Penney *et al*, 'Report on the Accident at Windscale No. 1 Pile on 10 October 1957 Reproduction of the Report (the 'Penney Report') of the Committee of Inquiry

into the possible effects of nuclear contamination from power plants. The study concluded that a similar leak could potentially have affected up to 43,000 people and caused US$7bn in damages.[11] The report's findings alerted states to the potentially large-scale damage that could result from the use of nuclear energy, some of which could extend beyond the origin state's borders. The publication of the report led to negotiations towards the regulation of the use of nuclear energy.[12] Shortly after, the IAEA launched studies towards developing a regime to regulate the use of nuclear power, which resulted in the adoption of international agreements in the field.[13]

The first agreement to regulate transboundary damage and its consequences was the Convention on Third Party Liability in the Field of Nuclear Energy (1960 Paris Convention).[14] Adopted in 1960 between member states of the Organization for Economic Co-operation and Development (OECD), the agreement ensured the compensation of '(a) damage to or *loss of life of any person*; and (b) damage to or *loss of any property'*.[15] The agreement was followed, two years later, by the Convention on the Liability of Operators of Nuclear Ships (Nuclear Ships

(Chairman, Sir William Penney) Established by the United Kingdom Atomic Energy Authority (UKAEA), which reported to the UKAEA on 26 October 1957' (2017) 37(3) *Journal of Radiological Protection* 780, 785-792.

[11] United States Atomic Commission, 'Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Power Plants' [1957] available on <https://www.osti.gov/servlets/purl/4344308> accessed 10 June 2022, 14.

[12] Peider Konz P, 'The 1962 Brussels Convention on the Liability of Operators of Nuclear Ships' (1963) 57(1) *AJIL* 100, 100.

[13] Hardy (n 8) 240-245.

[14] Convention On Third Party Liability In The Field Of Nuclear Energy (with annexes) (Adopted 29 July 1960, into force 1 April 1968) 1974 UNTS 264 (1960 Paris Convention).

[15] Ibid, Article 3.

Convention).[16] The treaty defined the consequences of transboundary damage resulting from their operation and ensured compensation for a variety of losses. Its Article I (7) defined the relevant heads of damage for compensation purposes, providing that it 'means loss of life or personal injury and loss or damage to property […]' adding that 'any other loss, damage or expense so arising or resulting shall be included only if and to the extent that the applicable national law so provides' (emphasis added).[17] The following year, the Vienna Convention on Civil Liability for Nuclear Damage (Vienna Convention)[18] provided a very similar concept of damage, regulating compensation for loss of life, personal injury, and property. The treaty also provided that each state party could regulate compensation for other specific losses in their domestic legislations.[19]

1.2. Transboundary Damage from Space Objects

Another activity to spark early fears for its potential for causing damage to other states was outer space exploration. Within the UN, the subject has been debated since the early 1950s.[20] In 1963, states agreed on the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space,[21] recognising their responsibility for any damage that may result from space exploration in which they are

[16] Convention on the Liability of Operators of Nuclear Ships (adopted 25 May 1962, not in force) (963) 57 AJIL 268 (Nuclear Ships Convention).
[17] Ibid, Article I(7).
[18] Vienna Convention on Civil Liability for Nuclear Damage (adopted 21 May 1963, into force 12 November 1977) 2241 UNTS 270 (1963 Vienna Convention).
[19] Ibid, Article 1(1)(k).
[20] Carl Q Christol, 'International Liability for Damage Caused by Space Objects' (1980) 74(2) *AJIL* 346, 351.
[21] UNGA Res 1962(XVIII) (13 December 1963) UN Doc A/RES/1962 (XVIII).

involved.[22] Six years later, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies (Outer Space Treaty)[23] provided that states were liable for damage resulting from objects launched within their jurisdictions. Any damage *to persons and companies* resulting from these endeavours led to their obligation to provide adequate compensation.[24] Finally, in 1972, the Convention on International Liability for Damage Caused by Space Objects (Space Liability Convention)[25] provided that states were liable for relevant damage arising from these activities. Again, the agreement restricted liability to 'loss of life, personal injury […] health; or loss or damage to property of States or of persons'.[26]

As discussed, some of the earliest treaties defining transboundary damage and its consequences provided that the only damage that was relevant for reparation purposes was that affecting persons or property.[27]

[22] Ibid, Article 5.
[23] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space
Including the Moon and Other Celestial Bodies (adopted 27 January 1967, into force 10 October 1967).
[24] Ibid, Article VI-VII,
[25] 1972 Convention on International Liability for Damage Caused by Space Objects (adopted 29 March 1972, into force 1 September 1972) 961 UNTS 187 (Space Liability Convention),
[26] Ibid, Article 1,
[27] C.f. Louise de La Fayette, 'The Concept of Environmental Damage in International Liability Regimes' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law* (OUP 2002), 182,

2. The Recognition of the Relevance of Environmental Damage in the Context of Transboundary Damage and Provisions for Environmental Restoration

2.1. Oil Pollution

It did not take long for the existing definitions of damage to be regarded as insufficient. The need to provide redress for environmental harm became increasingly evident, notably after a succession of catastrophic events which left widespread damage to local environments across the world. In the late 1960s, a series of high-profile oil-spill incidents resulted in large-scale environmental damage, sparking widespread outrage[28] and encouraging states to negotiate an agreement to regulate this damage and its consequences.[29]

a) The 1969 CLC, the North Sea Convention, and the Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources

The first of several treaties to provide a broad concept of damage was the Convention on Civil Liability for Oil Pollution Damage (1969 CLC),[30] adopted under the auspices of the International Maritime Organisation (IMO).[31] In the 1969 CLC, states agreed on an open-ended definition of

[28] Refer to Kenneth Johansen and Richard Parrish, *Oil Spills/Oil Tanker Operations, Report 5* (1979, University of Oregon), 1,
[29] Jaclyn A Zimmermann, 'Inadequacies of the Oil Pollution Act of 1990: Why the United States Should Adopt the Convention on Civil Liability' 1999 (23) 5 *Fordham International Law Journal* 1499, 1504.
[30] 1969 Convention on Civil Liability for Oil Pollution Damage (adopted 29 November 1969, into force 19 June 1975) 973 UNTS 3 (1969 CLC).
[31] Peter N Swan, 'International and National Approaches to Oil Pollution Responsibility: An Emerging Regime for a Global Problem' (1971) 50 *Or L Rev* 504, 506-507; also Ved P Nanda, 'The Torrey Canyon Disaster: Some Legal Aspects' (1967) 44 *Denv LJ* 400, 401; Tullio Treves, 'Les tendances récentes du Droit conventionnel de la responsabilité

damage resulting from accidents caused by the transportation of oil by ship, which defined damage as 'loss or damage caused outside the ship […] and […] the costs of preventive measures and further loss or damage caused by preventive measures'.[32] The Convention was followed by the adoption, two years later, of the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (Fund Convention)[33] to ensure the payment of compensation where it could not be obtained under the 1969 CLC.[34]

The following years witnessed international agreements reflecting similar definitions to that of the 1969 CLC, as well as its model of compensation.[35] In 1977, the Convention on Civil Liability for Oil Pollution Damage from Offshore Operations (North Sea Convention) provided a similar definition of damage to that in the 1969 CLC.[36] That same year, the provision was also reflected in the Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources.[37]

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et le nouveau Droit de la Mer' (1975) 21 *AFDI* 767, 769-776; Robert E Stein, 'Responsibility and Liability for Harm to the Marine Environment' (1976) 6 *Ga J Int'l & Comp L* 1 41, 53.

[32] Ibid, Article 1(4), (7).

[33] International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (adopted 18 December 1971, into force 18 October (1978) 1110 UNTS 58 (1969 Fund Convention), Article 4(1).

[34] Ibid, Article 4(1).

[35] Bernard A Dubois, 'The 1976 London Convention on Civil Liability for Oil Pollution Damage from Offshore Operations' (1977) 9 *J Mar L & Com* 61, 63.

[36] Convention on Civil Liability for Oil Pollution Damage from Offshore Operations (adopted 1 May 1977, not into force) (1977) 16 *ILM* 1450 (North Sea Convention), Article 1(6) and Article 1(7).

[37] Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources (adopted 1 May 1977, not into force) (1977) 16 ILM 1451, Article 1(6)-(7).

The discussed provisions ensured the compensation of the costs incurred from mitigation measures, such as the containment of oil at sea and any additional damage resulting from these measures, as well as clean-up costs.[38] They defined "preventive measures" as measures to prevent or minimise the spread and effects of pollution.[39] The expression “loss of damage outside the ship” appeared to create the possibility of compensation for virtually any damage resulting from oil spills.

Although the open-ended provision appeared to address damage to the natural environment and its compensability, an assessment of the *travaux preparatoires* suggests otherwise.[40] Scholars were also sceptical about its applicability to pure environmental damage.[41] Still, it created the possibility of states filing claims for compensation for this sort of damage. The parties to the Fund Convention became especially concerned after the *Antonio Gramsci* oil spill, when the USSR presented a claim of compensation for damage to the marine environment. The claim of compensation used mathematical models to calculate the economic value of these losses, which the parties considered exceedingly abstract. Reportedly, the parties believed the provision led to the possibility of claims involving virtually unlimited amounts in compensation. This made

[38] Nicholas J Healy, 'The International Convention on Civil Liability for Oil Pollution Damage, 1969' (1970) 1 *J Mar L & Com* 317, 318; also, de La Fayette, ‘The Concept of Environmental Damage…’ (n 27) 154.
[39] Ibid, Article 1(4) and Article 1(7).
[40] Maria Clara Maffei, ‘The Compensation for Ecological Damage in the “Patmos” Case’ in Francesco Francioni and Tullio Scovazzi, *International Responsibility for Environmental Harm* (1993 Graham and Trotham), 384-390; also, de La Fayette, ‘The Concept of Environmental Damage…’ (n 27) 154.
[41] Swan (n 31) 526; also, de La Fayette, ‘The Concept of Environmental Damage…’ (n 27) 154.

it impossible to foresee the cost of future claims.[42] This concern was expressed when, in 1980, the Oil Pollution Fund Assembly issued Resolution 3 of 1980, which ruled out the compensation for environmental damage based on abstract quantification.[43]

b) 1984 Protocol to the 1969 CLC and the 1992 CLC

As discussed, the 1969 CLC´s definition of damage led to the unpredictability of future claims. This led the parties to adopt the 1984 Protocol to the 1969 CLC,[44] which introduced a narrower concept of damage. Its new definition of damage provided for the compensability of damage resulting from oil discharges but limited it to compensation for loss of profits[45] and the 'costs of reasonable measures of reinstatement actually undertaken or to be undertaken'.[46] In addition, the 1984 Protocol maintained the provision which ensured compensation for costs associated with mitigation and preventive measures, and the losses resulting from them.[47]

The 1984 Protocol to the CLC was the first agreement to clearly define the environment as an aspect of transboundary damage deserving

[42] de La Fayette, 'The Concept of Environmental Damage…' (n 27) 155.
[43] Oil Pollution Fund Assembly, Resolution No. 3(1980), available on https://documentservices.iopcfunds.org/resolutions/ accessed on 5 June 2022.
[44] 1984 Protocol To Amend The International Convention On Civil Liability For Oil Pollution Damage 23 ILM 177 (adopted 25 May 1984, not into force) (1984 Protocol to the 1969 CLC).
[45] According to the *travaux preparatoires,* however, the expression "loss of profit" was restricted to purely economic losses. Refer to Rene Lefeber, *Transboundary Environmental Interference and the Origin of State Liability* (Springer 1996), 295; cf Council of Europe, 'Explanatory Report to the Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment' ETS 150, Para 37.
[46] 1984 Protocol to the 1969 CLC (n 44) Article 2(3).
[47] Ibid, Article 2(3).

compensation. Its definition expressly extended compensation to the cost of reinstating or restoring the affected environment, as long as its cost remained *reasonable,* and that reinstatement was *actually carried out.* The Protocol never came into force[48] and was later superseded by the International Convention on Civil Liability for Oil Pollution Damage (1992 CLC).[49] However, its provision remained influential, since the 1992 CLC maintained the same concept of damage provided for in the 1984 Protocol.[50]

c) Other International Maritime Organisation (IMO) Liability Conventions

The IMO provided the stage for states to negotiate the regulation of transboundary damage resulting from other risks involved in maritime transportation. In 1996 states addressed damage as a result of the spill of other dangerous substances carried by sea, with the adoption of the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS Convention).[51] The HNS Convention followed the model of the 1984 Protocol to the 1969 CLC, recognising the relevance of environmental damage, and providing compensation for reinstatement costs, to the extent that reinstatement was *actually undertaken or planned to be undertaken.* It also repeated the previous provisions on

[48] de La Fayette, 'The Concept of Environmental Damage…' (n 27) 155.
[49] International Convention on Civil Liability for Oil Pollution Damage (adopted 27 November 1992, into force 30 May 1996) (1997) 1956 UNTS 285 (1992 CLC).
[50] Ibid, Article I(6).
[51] International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (adopted 3 May 1996, not in force) (1996) 25 *ILM* 1406 (HNS Convention).

compensation for the costs of preventive measures and losses resulting from these measures.[52] A few years later, the International Convention on Civil Liability for Bunker Oil Pollution Damage (Bunker Convention)[53] addressed the liability of operators for discharges of fuel or "bunker oil" and provided a virtually identical provision to that in the 1992 CLC and HNS Convention.[54]

This body of regulations revealed the agreement of states on the reality of transboundary damage to the environment and the need for its reparation. It also revealed the agreement of the state parties that reparation of damage to the environment should lead to prompt containment, mitigation, and clean-up measures, and later by the restoration of the local environment.

2.2. 1989 Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels

Initially contained within IMO-related activities, the regulation of transboundary damage and its consequences soon spread to other areas. In 1989, following two decades of negotiation,[55] states agreed on the Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels

[52] Ibid, Article 1(6).
[53] International Convention on Civil Liability for Bunker Oil Pollution Damage (adopted 23 March 2001, into force 21 November 2008) (Bunker Convention).
[54] Ibid, Article 1(9).
[55] Malcolm Evans, 'Explanatory Report on the Convention on Civil Liability for Damage Caused during Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (CRTD)' (1991) 1991 *Unif L Rev os* 76, 76.

(CRTD).[56] The CRTD provided for compensation of damage resulting from the terrestrial and fluvial transportation of dangerous goods. It adopted a definition of compensable damage in terms nearly identical to the 1984 Protocol and 1992 CLC provisions. As a result, the CRTD recognised the relevance of damage to the environment by ensuring compensation for the cost of reinstatement 'actually undertaken or to be undertaken', preventive measures and losses thereof.[57] To contemporary scholars, this definition was used to discourage speculative claims.[58] As devised, the provision allowed the compensation of costs with restoration, while at the same time ruling out any discussion on compensation for other aspects of environmental damage, such as financial reparation for losses of environmental values.

2.3. 1999 Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal

Another context in which this sort of damage arose - and that concerned states - was in the sad reality of international transportation of waste. The subject led to significant dissent over the problem of developed countries outsourcing their waste to developing nations, particularly the most dangerous sorts of waste.[59] As a result, in 1999, states agreed on the

[56] Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (Adopted 10 October 1989, not in force) ECE/TRANS/79 (CRTD), Article 1(10).
[57] CRTD (n 56), Article 1(10).
[58] Evans (n 55) 98-111.
[59] David P Hackett, 'Assessment of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal' (1990) 5 *Am U J Int'l L & Pol'y* 291, 291-292.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal,[60] which restricted the transboundary movement and disposal of waste. Ten years later, its parties adopted the Protocol on Liability and Compensation for Damage Resulting From Transboundary Movements of Hazardous Wastes and their Disposal.[61] The protocol defined damage to the environment and its consequences in the same terms as previously discussed treaties.[62]

This section explained that, since the adoption of the 1969 CLC, environmental damage came to be recognised as a relevant aspect of transboundary damage. From then on, liability agreements ensured some level of compensation for damage to the environment, including the natural environment. This was addressed by compensation for the costs associated with responses to environmental catastrophes, such as clean-up costs, and losses resulting from these measures. In addition, the treaties discussed focused on the *actual* restoration of the harmed environment within affected states, ensuring compensation for restoration that was either already carried out or planned to be undertaken in future.

[60] Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (adopted 22 March 1989, into force 24 May 1992) (1989) 28 ILM 657 (Basel Convention).
[61] Protocol on Liability and Compensation for Damage Resulting From Transboundary Movements of Hazardous Wastes and their Disposal (Adopted 10 December 1999, not into force) (Liability Protocol to the Basel Convention).
[62] Ibid, Article 2.

3. Recent Agreements Which Provide for Comprehensive Definitions and Compensation for Environmental Damage

Whilst the agreements discussed in the previous section ensured compensation for transboundary environmental damage, they failed to address cases of catastrophic damage where reinstatement was impossible or unreasonable.[63] This resulted in the lack of accountability for losses in some cases of large-scale environmental damage.[64]

In 1982, the UN Convention on the Law of the Sea (UNCLOS) required states to ensure the effective protection of the marine environment when performing seabed activities.[65] Its Annex III provided the liability of those involved in seabed exploration for 'the actual amount of any damage'.[66] It did not clarify whether this involves any form of compensation for environmental damage. However, particularly after the environmental catastrophe resulting from the *Exxon Valdez* spill, states began to look at the problem more carefully, considering that this sort of damage frequently makes restoration impossible or unfeasible.[67] Accordingly, in the early 1990s, a UN report called for the enhancement of these standards, suggesting solutions for irrecoverable environmental damage. The report remarked the limitations of the liability treaties adopted so far and advised a focus on environmental redress, suggesting a wide range

[63] de La Fayette, 'The Concept of Environmental Damage…' (n 27) 156.
[64] Ibid, 184
[65] UNGA, Convention on the Law of the Sea (Adopted 10 December 1982, into force 16 November 1994) 1833 UNTS 3 UN Doc A/CONF.62/121 and Corr. 1 to 8. (UNCLOS), Article 145
[66] Ibid, Annex III, Article 22.
[67] Tyler J Savage, 'North American Oil Pollution: Who Is Liable for a Canadian/American Catastrophe' (1998) 4 *Roger Williams U L Rev* 335, 346.

of rehabilitation measures,[68] among which were “habitat replacement”, “nature swaps”, and compensation in kind.[69]

3.1. The 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA)

The first international agreement to focus specifically on the consequences of human activities on the environment and on environmental reparation was the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA).[70] The agreement was adopted in 1988 within the Antarctic Treaty[71] System. The CRAMRA provided for the liability of operators for ‘damage to the Antarctic environment or dependent or associated ecosystems’ which included cases in which, for any reason, the environment could not be reinstated.[72] According to its Article 8, compensation should cover ‘loss of or impairment […] of dependent or associated ecosystems’,[73] the cost of response actions, clean-up, and reinstatement of the previous conditions of the environment.[74]

Due to the resistance of most states to mineral exploration in the Antarctic continent,[75] the CRAMRA never came into force and was shortly

[68] Alfred Rest, 'Ecological Damage in Public International Law' (1992) 22 *Envtl Pol'y & L* 31, 34
[69] Ibid, 31-35, citing UN and ECE, ‘Final report of the Task Force on Responsibility and Liability regarding Transboundary Water Pollution’ (1990) E/ECE/]ENVWA/R.45.
[70] Convention on the Regulation of Antarctic Mineral Resource Activities (adopted 25 November 1988, not into force) (1988) 27 ILM 859.
[71] Antarctic Treaty (adopted 1 December 1959, into force 23 June 1961) 402 UNTS 71 (Antarctic Treaty).
[72] Ibid, Article 8(2)(a).
[73] Ibid, Article 8(2)(b).
[74] Ibid, Article 8(2)(c).
[75] Mark P Jacobsen, ‘International Agreements - Convention on the Regulation of Antarctic Mineral Resource Activities’ (1989) 30(1) *Harvard International Law Journal* 237, 244-247.

superseded by the Protocol on Environmental Protection to the Antarctic Treaty.[76] Still, the CRAMRA remains relevant for acknowledging Antarctica's ecological value,[77] being the first to provide comprehensive compensation to the environment itself[78] and eliminating the limitation of compensation to the restoration actually undertaken or to be undertaken.

3.2. Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (Lugano Convention)

In 1993, the Council of Europe adopted a general convention respecting damage to the environment and disciplining its reparation. The Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (1993 Lugano Convention)[79] is notable for establishing a regime which addresses environmental damage from all causes. According to its Article 1, the treaty aims to ensure adequate compensation for these forms of damage, emphasising its goal of reinstating the environment.[80] The Convention continued the tradition of ensuring compensation for the cost of reinstating the environment, insofar as it is actually undertaken or to be undertaken.[81] However, it was the first treaty where states expressed an aim to further develop the goal of

[76] Protocol on Environmental Protection to the Antarctic Treaty (adopted 4 October 1991, into force 14 January 1998) (Environmental Protocol to the Antarctic Treaty) (1991) 30 *ILM* 1461.
[77] CRAMRA (n 70) Preamble.
[78] de La Fayette, 'The Concept of Environmental Damage…' (n 27) 178.
[79] Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (1993 Lugano Convention) (adopted 21 June 1993, not in force) (1993) 32 ILM 1228, Article 32(1).
[80] Ibid, Article 1.
[81] Ibid, Article 2(7)(c).

reinstatement, which it defined in broad terms as 'any measures' that aim to reinstate or restore 'the components of the environment'.[82] In addition, it also covers the costs, where necessary, of introducing 'the equivalent of these components into the environment'.[83] The treaty also provides for a broad definition of the environment, in which it includes 'natural resources both abiotic and biotic, such as air, water, soil, fauna and flora and the interaction between' them and even aspects of landscape.[84]

The 1993 Lugano Convention pays particular attention to the "components" of the environment, requiring redress for its specific components. This might refer, for example, to populations of flora and fauna that were impacted by the event. Consequently, compensation should cover the cost of the introduction of equivalents of these components into the environment.[85] For instance, it should cover the cost of breeding and introducing "equivalent" animal species into the environment.[86] Scholars point out that restoration initiatives generally involve the introduction of plant species that are typical of each particular biome.[87]

The Lugano Convention is notable not only for its clear and broad definition of the "environment", expressing the value of a wide range of its

[82] Ibid, Article 2(8).
[83] Ibid, Article 2(8).
[84] Ibid, Article 2(10).
[85] Ibid, Article 2(10).
[86] de La Fayette, 'The Concept of Environmental Damage…' (n 27) 163.
[87] Steve Packard, 'Restoring Oak Ecossystems' in William Throop, *Environmental Restoration: Ethics, Theory and Practice* (Humanity 2000), 158.

components. It also expressly provides for alternative forms of reparation in pursuit of an overall recovery of harmed areas.

3.3. The Re-assessment of Liability for Nuclear Damage

In 1986, the disaster at the Chernobyl nuclear plant - located at the heart of the European continent - provided a demonstration of the destructive potential of nuclear accidents. The disaster revealed the insufficiency of existing agreements to deal with the extent of the effects of large-scale nuclear contamination. This was a wake-up call for states to re-engage in negotiations to review the existing regimes of liability for damage resulting from nuclear activities.[88]

Intense inter-state negotiations of the parties to the existing treaties led to several agreements on the subject. The first of these to be adopted was the Protocol to Amend the 1963 Convention on Civil Liability for Nuclear Damage, which amended the 1963 Vienna Convention.[89] Adopted in 1997, the amendment followed the example of the Lugano Convention regarding the extent of reparation of environmental damage. In addition to the traditionally provided compensation for costs of reinstatement, it provided that reparation must ensure, where "reasonable", the introduction of "equivalents" of the destroyed or damaged components in the environment.[90] In addition, the parties to that agreement joined with

[88] Philippe Sands et al, *Principles Of International Environmental Law* (3edn, CUP 2012), 742.
[89] 1997 Protocol to Amend the 1963 Convention on Civil Liability for Nuclear Damage (adopted 12 September 1997, into force 4 October 2003) (1997 Protocol to the Vienna Convention).
[90] Ibid, Article 2(m).

the parties to the 1960 Paris Convention to adopt the Convention on Supplementary Compensation for Nuclear Damage.[91] The latter agreement provided for an identical definition of damage and extent of compensation as the previously discussed convention.[92]

3.4. Transboundary Waters

Transboundary damage frequently affects shared resources, particularly transboundary watercourses. Transboundary watercourses are bodies of water located in or at the border across different states. Given its frequency, in 1992, states agreed on the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Watercourses Convention). [93] The convention provided that the parties agreed on the obligations to 'prevent and reduce pollution' to these waters, to aim for 'ecologically sound' water management, 'environmental protection', and to ensure the conservation of ecosystems.[94] Most notably, states agreed on their obligation to provide, 'where necessary, restoration of ecosystems'.[95] Overall, these provisions reveal the commitment of states to the protection and restoration, where necessary, of these aquatic environments. In parallel, states agreed on the Convention on the Transboundary Effects of Industrial Accidents,[96] which

[91] 1997 Convention on Supplementary Compensation for Nuclear Damage (CSC) (adopted 12 September 1997, into force 15 April 2015) 36 ILM 1473.
[92] Ibid, Article I (viii).
[93] Convention on the Protection and Use of Transboundary Watercourses and International Lakes (adopted 17 March 1992, into force 6 October 1996) 1936 UNTS 269 (Watercourses Convention), Article 1.
[94] Ibid, Article 2(2)(c).
[95] Ibid, Article 2(2)(d).
[96] Convention on the Transboundary Effects of Industrial Accidents (adopted 17 March 1992, into force 19 April 2000) 2105 UNTS 457.

provided that the parties shall take steps towards the implementation of 'restoration measures' for the environment damaged as a result of industrial accidents.[97] The Convention also committed the parties to the negotiation of a responsibility and liability treaty in the field.[98]

As a result, in 2003, the parties to both treaties agreed on the Joint Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters.[99] The agreement followed the example of the other treaties discussed in this section, providing a broad definition of damage and restoration,[100] to ensure compensation for the costs of introducing 'equivalent components' into transboundary waters.[101] It also expressed the aim to restore riparian environments to their previous conditions resorting, whenever necessary, to the introduction of "equivalent components" in the environment.[102]

3.5. Environmental Damage and its Reparation within the European Union

The European Union (EU) is renowned for being at the forefront of initiatives to protect the environment. Among its most relevant supra-national regulations regarding our subject is the EU Directive 2004/35/EC

[97] Ibid, Article 3(1).
[98] Ibid, Article 13.
[99] 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 (adopted 21 May 2003, not into force) UN Doc ECE/MP.WAT/11-ECE/CP.TEIA/9.
[100] Ibid, Article 2(2)(d).
[101] Ibid, Article 2(2)(g).
[102] Ibid, Article 2(2)(g).

on Environmental Liability with Regard to the Prevention and Remedying of Environmental Damage (also referred to as Environmental Liability Directive or ELD).[103] The Directive expresses the concern of European nations with the widespread contamination of environments in the region, and their commitment to the prevention and remediation of this kind of damage.[104]

The first remarkable aspect of the ELD is that the regulation concerns exclusively damage to the environment and its reparation. The Directive proposes a 'framework of environmental liability based on the "polluter-pays" principle, to prevent and remedy environmental damage'.[105] It provides a much broader concept of damage than any of those previously discussed, with specific definitions of damage *to protected species and natural habitats*, *water damage,* and *land damage*. It defines damage to species and natural habitats as the significant interference that impacts on their conservation status.[106] Water damage is any interference which impacts the ecological or chemical status of a body of water, while land damage represents contamination of the soil which brings risks to human health.[107] As a result, the Directive provides for a broad range of

[103] 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 2004/35/EC (30.04.2004) OJ L 143 56 (2004 ELD), Article 1.
[104] Ibid, Preamble.
[105] Ibid, Article 1.
[106] Ibid, Article 2(1)(a).
[107] Ibid, Article 2(1)(b) and (c).

reparation measures, including the reinstatement of the environment in *alternative* areas and compensation for *interim losses*.[108]

Annex II of the 2004 ELD defines measures of remediation which include the reintroduction of similar elements or "equivalent alternatives"[109] Firstly, it provides for "primary remediation", which consists of traditional reinstatement measures.[110] In addition, it provides for the restoration where it cannot be achieved through traditional means,[111] aiming to achieve similar ecosystem health, even if in alternative sites, if necessary.[112] The aim is to deliver similar ecological services to those originally provided by the original area,[113] compensating for nature's instrumental (e.g. recreational, flood control) and ecological functions (e.g. as *habitat*).[114]

More remarkably, the ELD provides for additional '*c*ompensatory remediation' which accounts for interim losses of ecological services. These measures must be implemented and maintained throughout the recovery process of the original area, until it returns to its previous state.[115] They may consist of 'additional improvements to protected natural habitats and species or water at either the damaged site or at an

[108] Ibid, Article 1; also, Edward HP Brans, 'The Environmental Liability Directive: Legal Background and Requirements' in Joshua Lipton *et al* (eds), *Equivalency Methods for Environmental* Liability (Springer 2018), 14.
[109] 2004 ELD (n 103) Article 2, Para 11, and Annex II.
[110] Ibid, Annex II (1)(a).
[111] Ibid, Annex II (1)(b).
[112] Ibid, Annex II (1.1.2).
[113] Ibid, Annex II (1.1.2).
[114] Joshua Lipton et al, 'Resource Equivalency Methods in the European Union: A "Toolkit" for Calculating Environmental Liability' in Joshua Lipton *et al* (eds), *Equivalency Methods for Environmental* Liability (Springer 2018), 27.
[115] Ibid, Annex II (1)(c).

alternative site'.[116] Finally, the ELD provides for the primary use of similar natural elements to the ones lost, but accepts the introduction of 'alternative natural resources and/or services'.[117] Examples of compensatory remediation include the creation of temporary reserves in nearby sites. It is worth noting, however, that despite its devotion to the environment and its reparation, and for being a piece of supra-national legislation, the ELD is not a treaty in the strictest sense.

3.6. Nagoya-Kuala Lumpur Supplementary Protocol

Among international treaties *stricto sensu,* the most advanced and environmentally oriented is the Nagoya Kuala-Lumpur Supplementary Protocol on Liability and Redress (N-KL Supplementary Protocol)[118] to the Cartagena Protocol on Biosafety.[119] The N-KL Supplementary Protocol addresses the consequences of damage to biological diversity as a result of the release of genetically modified organisms (GMOs). Devoted exclusively to aspects of damage that affect the environment, the N-KL Supplementary Protocol does not provide reparation for property losses. On the other hand, the N-KL Supplementary Protocol expands the definition of "damage" beyond previous agreements, to include any

[116] Ibid, Annex II (1.2.3).
[117] Ibid, Annex II (1.2.2).
[118] Nagoya - Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety (adopted 15 October 2010, into force 5 March 2018) UN Doc UNEP/CBD/BS/COP-MOP/5/17 (Nagoya - Kuala Lumpur Supplementary Protocol).
[119] Cartagena Protocol on Biosafety to the Convention on Biological Diversity (adopted 29 January 2000, into force 11 September 2003) 2226 UNTS 208 (Cartagena Protocol on Biosafety).

adverse effects on 'the conservation and sustainable use of biological diversity'.[120]

The N-KL Supplementary Protocol provides liability for response measures and the cost of restoring biological diversity to previous conditions or their 'near equivalent',[121] by (a) identical or similar elements; and (b) at the same or alternative locations.[122] Overall, its provisions represent a clear shift of the focus of liability towards the environment itself and its reparation. The N-KL Supplementary Protocol is among the most recent developments in the discipline of our subject and will be discussed further in Chapter 7.[123]

4. Discussion

The previous sections discussed how international agreements addressed liability for transboundary damage. They revealed that early definitions of transboundary damage were restricted to transboundary harm to persons and property. Subsequent agreements increasingly focused on transboundary environmental damage, providing for compensation related to clean-up, containment, and restoration costs. Finally, more recent treaties have developed provisions to address environmental damage where restoration is impossible or unfeasible, providing innovative solutions for environmental harm. This succession of

[120] Ibid, Article 2(2)(b).
[121] Ibid, Article 2(2)(d)(ii)(a).
[122] Ibid, Article 2(2)(d)(ii)(b).
[123] Refer to Chapter 7, Section 3.

treaties suggests an increasing attention of their parties to the importance of a comprehensive response to transboundary environmental damage in the treaty law.[124]

4.1. The Evolution of the Concept of Transboundary Damage and the Recognition of Nature's Intrinsic Value

The evolution of the concept of relevant transboundary damage in liability regimes reflects the growing recognition of states of the importance of the environment. To Special Rapporteur Pemmaraju Rao, the fact that regimes provided for the compensation for this type of damage, progressively incorporated concern for the environment and its conservation[125] in 'a shift towards a greater focus on damage to the environment per se'.[126]

The requirement of reparation for transboundary environmental damage regardless of its economic worth and the requirement of environmental restoration may express the recognition of nature's intrinsic value. Within the ILC, Special Rapporteur Rao has noted the need to provide compensation for restoration costs, including for innovative restoration measures that account for losses of intrinsic value.[127] The ILC has

[124] The Report of the Group of Legal and Technical Experts on Liability and Redress in the Context of Article 14(2) of the CBD reached a similar conclusion. Cf CBD CoP, 'Liability And Redress In The Context Of Paragraph 2 Of Article 14 Of The Convention On Biological Diversity: An Analysis Of Pertinent Issues' (12-14 October 2005) UN Doc UNEP/CBD/EG-L&R/1/2/Rev.1, Para 17 and 38.
[125] de La Fayette, 'The Concept of Environmental Damage…' (n 27) 154 and 181-183; also, (n 2) 526.
[126] Pemmaraju S Rao, 'International Liability for Transboundary Harm' (2004) 34 *Envtl Pol'y & L* 224, 228.
[127] ILC, 'Second report on the legal regime for the allocation of loss in case of transboundary harm arising out of hazardous activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' (2004) UN Doc A/CN.4/540, Para 31.

identified a similar tendency in domestic systems, with Rao pointing to this as further 'evidence of a predominant trend' towards the recognition of nature's intrinsic value among states.[128]

Respected scholars have expressed the opinion that this evolution in the treaty law illustrates the growing recognition among states of an increasingly wider range of environmental values, with a possible acceptance of nature's intrinsic value.[129] To Alan Boyle, these provisions demonstrate that the notion of damage is not limited to the material elements of the environment but also extends to its intrinsic value.[130] Accordingly, Malgosia Fitzmaurice has noted that

> [the] contemporary concept of harm arguably encompasses [… also injury] to the intrinsic value of the environment, including individual components and whole ecosystems.[131]

Given the objectivity and immutability of intrinsic values,[132] whatever is intrinsically valuable is equally valuable in all situations. Therefore, it would be unreasonable to consider the natural environment intrinsically relevant in some contexts but not in others. It is therefore desirable that international law be further developed to protect these values in the

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[128] ILC, 'Third report on the legal regime for the allocation of loss in case of transboundary harm arising out of hazardous activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' (2006) UN DOC A/CN.4/566, Para 22.
[129] Rest (n 69) 31-32 and 38-39; also, Christina Voigt, 'International Responsibility and Liability' in Lavanya Rajamani and Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law* (OUP 2021), 1012-1013.
[130] Alan Boyle, 'Reparation for Environmental Damage in International Law: Some Preliminary Problems' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law* (OUP 2002), 20.
[131] Fitzmaurice, 'International Responsibility…' (n 1) 1015.
[132] Michael Bowman, 'Biodiversity, Intrinsic Value, and the Definition and Valuation of Environmental Harm' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law. Problems of Definition and Valuation* (OUP 2002), 43

context discussed here. At least since the early 2000s, there has been evidence of states openly arguing for the recognition of the responsibility of states for pure environmental damage, including losses of intrinsic values.[133]

4.2. The Relationship Between Liability Treaties and Customary International Law Related to the Reparation of Transboundary Environmental Damage

4.2.1. The Process of Formation of Customary International Law

The traditional process of formation of customary international law depends on consistent state practice (*usus*), in addition to a belief by states that such behaviour is legally required (*opinio juris*).[134] From that perspective, the actual and regular conduct of states is generally considered the most relevant aspect for identifying customary norms. In this sense, identifying customary law is primarily an exercise of observation of inter-state relations.[135] To conclude that a rule of customary international law exists, one must collect sufficient evidence of its two elements: state practice and *opinio juris* – the conviction of states that a certain practice is accepted by law.[136]

The concept of state practice itself is not straightforward.[137] The International Law Commission (ILC)´s Draft Conclusions on the

[133] Refer to UNGA, 'Summary record of the 16th meeting' (2003) UN Doc A/C.6/58/SR.16, Para 63.
[134] ILC, 'Draft Conclusions on Identification of Customary International Law, with Commentaries' (30 April–1 June and 2 July–10 August 2018) UN Doc A/73/10, Conclusion 2; also, Michael Akenhurst, 'Custom as a Source of International Law' (1976) 47(1) *BYIL* 1, 2-8 and 31-32; Roozbeh B Baker, 'Customary International Law in the 21st Century: Old Challenges and New Debates' (2010) 21 *EJIL* 173, 176.
[135] Daniel Bodansky, 'Customary (and Not So Customary) International Environmental Law'
(1995) 3 *IJGLS* 105, 108-110.
[136] ILC, 'Draft Conclusions…' (n 134) Conclusion 3.
[137] Akenhurst, 'Custom…' (n 134) 2-8.

Identification of Customary International Law define state practice as the 'conduct of the state'.[138] While some authors have required *physical acts*, it is now widely accepted that statements – whether oral or written – and claims before domestic and international courts may also be regarded as state practice.[139] The International Court of Justice (ICJ) endorsed this view in the *North Sea Continental Shelf*, where it accepted statements as valid forms of state practice.[140] This approach has been reflected in the Draft Conclusions, which accept verbal acts as state practice.[141]

However, statements may only be regarded as state practice insofar as they are consistent with actual state behaviour.[142] Therefore, the value of statements becomes questionable, particularly when states act in a manner which is not consistent with their declarations. Bodansky refers to this inconsistency as frequent particularly in the environmental sphere. He cites, for example, that despite the profusion of statements affirming the customary character of the preventive obligation,[143] transboundary pollution remains quite frequent in real life.[144] This discrepancy between state declarations and state acts reveals the importance of assessing actual state behaviour in this field.[145]

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[138] ILC, 'Draft Conclusions…' (n 134) Conclusion 5.
[139] Ibid, Conclusion 6, Commentary 2-5; also, Michael Wood, 'Formation and evidence of customary international law' in Annex A ILC, 'Report of the International Law Commission' (2011) UN Doc A/66/10, Para 8 at 307; Akenhurst, 'Custom…' (n 134) 3-4.
[140] *North Sea Continental Shelf* [1969] ICJ Rep 3, Para 70-74.
[141] ILC, 'Draft Conclusions…' (n 134) Conclusion 6(1).
[142] *North Sea* (n 140) Para 73-74.
[143] Bodansky, 'Customary…' (n 135) 110-111. Bodansky emphasises that 'in the environmental realm […] verbal claims and physical behaviour often diverge. States acknowledge the duty to prevent significant transboundary harm but continue to cause such harm'. See Bodansky, 'Customary…' (n 135) 115.
[144] Bodansky, 'Customary…' (n 135) 110-114; also, Akenhurst, 'Custom…' (n 134) 3.
[145] Ibid, 110.

4.2.2. Treaties and Customary International Law

This chapter has examined the adoption of a series of treaties addressing similar issues related to the reparation of transboundary damage. The discussion has focused on their definitions of relevant damage and their provisions concerning compensation. The Vienna Convention on the Law of Treaties acknowledges the interconnection between different rules of international law.[146] In the *Military and Paramilitary Activities in and against Nicaragua (Nicaragua case)*, the ICJ held that the content of treaties may reveal the existence of customary international law or contribute to its crystallisation.[147]

As statements that may amount to state practice, treaties may assist in the identification of customary rules,[148] even when they are not yet in force,[149] subject to state practice. The ICJ recalled the need to pay due attention to actual state practice in the *North Sea Continental Shelf.* In that case, the ICJ recalled that 'before a conventional rule can be considered to have become a general rule of international law', 'state practice should have been both extensive and virtually uniform in the sense of the provision invoked'.[150] Similarly, in the *Nicaragua* case*,* the ICJ found that declarations recognising certain rules indicate the

[146] Vienna Convention on the Law of Treaties (adopted 23 May 1969, into force 27 January 1980) 1155 UNTS 331, Article 31.
[147] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v USA)* [1986] ICJ Rep 14, Para 177-179 .
[148] Marina Fortuna, 'Interpretation of Customary Rules by Reference to Treaties and General Principles of Law', in Marina Fortuna *et al* (eds), *Customary International Law and Its Interpretation by International Courts: Theories, Methods and Interactions* (CUP 2024), 269; also, ILC, 'Draft Conclusions…' 'Custom…' (n 134) Conclusion 11(2).
[149] Akenhurst, 'Custom…' (n 134) 3 and 10.
[150] *North Sea* (n 140) Para 73-74.

existence of customary law only to the extent that they are confirmed by state behaviour.[151]

In the Draft Conclusions, the ILC codified the subject, explaining that treaties may influence customary international law in three distinct manners: codification,[152] crystallisation,[153] and generation.[154] In each of those instances, treaties serve as a valuable means of identifying customary norms.[155] Treaties codify customary international law when they identify already existing customary rules, thereby providing authoritative evidence of their existence. Evidence of codification may be revealed both in the text of a particular treaty and in its *travaux preparatoires*. This occurs when the negotiating parties expressly recognised the pre-existing customary nature of certain rules incorporated into the treaty´s text. [156] In addition, treaties may contribute to the crystallisation of rules that are already in the process of formation.[157]

Finally, treaties may contribute to the generation of customary international law. This happens when they precipitate the formation of new custom by providing a rule that orients the subsequent conduct of states to such an extent that it becomes seen as binding even upon

[151] *Nicaragua case* (n 147) Para 184.
[152] ILC, 'Draft Conclusions…' (n 134) Conclusion 11 (1)(a); see also, Gary L Scott and Craig L Carr, 'Multilateral Treaties and the Formation of Customary International Law' (1996) 25(1) *DJILP* 78, 81.
[153] ILC, 'Draft Conclusions…' (n 134) Conclusion 11(2)(b).
[154] Ibid, Conclusion 11(2)(c). See also, *Nicaragua* case (n 136) Para 177.
[155] Ibid, Conclusion 11, Commentary 2.
[156] Ibid, Conclusion 11, Commentary 5.
[157] Ibid, Conclusion 11(1)(b).

countries that have never become party to the treaty.[158] For a treaty to have generative force, scholars generally require it to be widely accepted, including by those states most affected by the rule, and that the relevant provisions have not been subject to reservations. Finally, treaty provisions will only indicate the existence of customary norms to the extent that they are corroborated by state practice.[159]

4.2.2.1. Repetitive Treaties as Evidence of Customary International Law

The creation of customary international law generally requires repeated conducts, as isolated acts are rarely sufficient to create customary norms.[160] The adoption of similar provisions across multiple treaties expresses their parties´ views regarding that certain subject,[161] but not necessarily indicate the law as it currently stands. Instead, they may reveal their views over how the law should develop. Still, a succession or a network of agreements addressing similar subjects may assist in the identification of customary norms,[162] particularly when those treaties attract a significant number of parties.[163] In addition, treaty provisions may acquire customary status when third states adequate their behaviour to the treaty provisions despite not being among its parties.[164]

[158] *North Sea case* (n 147) Para 70.
[159] Scott and Carr (n 147) 72.
[160] Akenhurst, 'Custom…' (n 134) 14.
[161] *Continental Shelf* (n 2) Para 27; also, ILC, 'Survey of liability regimes…' (n 3) Para 6.
[162] Jonathan I Charney, 'International Agreements and the Development of Customary International Law' (1986) 61 *WLR* 971, 979-980.
[163] Akenhurst, 'Custom…' (n 134) 16.
[164] Christopher Greenwood, 'Sources of International Law: An Introduction' in <https://legal.un.org/avl/pdf/ls/greenwood_outline.pdf> accessed 20 December 2024.

Still, to indicate the existence of a customary norm, those provisions should be consistent with actual state practice. As discussed above, in the *North Sea Continental Shelf* and *Nicaragua* cases, the ICJ found that treaty provisions do not necessarily evidence customary norms, particularly when they are inconsistent with actual state practice.[165] In the *Diallo* case, the ICJ considered the existence of multiple treaties on the same subject, finding that a series of agreements with similar provisions does not necessarily indicate the existence of a customary rule. Instead, the Court found that it may actually reveal its absence.[166]

By adopting several treaties with analogous provisions, states may in fact intend to create conventional norms where they did not previously exist. In addition, those treaties may express the intention to introduce *lex specialis* that derogate a general rule of customary law that would otherwise apply in those circumstances.[167] In essence, the identification of customary law still depends on the verification of consistence state practice accompanied by *opinio juris,* even where repetitive treaties exist.[168] Therefore, to be indicative of customary law, a succession of statements or treaties must still be accompanied by regular state behaviour.[169]

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[165] Refer to fn 149, 152 and 153 above.
[166] *Ahmadou Sadio Diallo (Republic of Guinea v Democratic Republic of the Congo)* [2007] ICJ Rep 582, Para 90; see also, ILC, 'Draft Conclusions…' (n 134) Conclusion 11(2).
[167] Ibid, Conclusion 11, Commentary 8.
[168] Ibid, Conclusion 11(2), Commentary 8.
[169] Bodansky, 'Customary…' (n 135) 110; also, Michael Akenhurst, 'The Hierarchy of the Sources of International Law' (1976) 47(1) *BYIL,* 276.

4.2.3. Liability Agreements and Customary International Law

This chapter has discussed a number of treaties through which states seek to ensure reparation for transboundary damage by channelling liability to operators. Aside from securing compensation and minimising the likelihood of international disputes, one reason for adopting these treaties may be the intention of the contracting parties to exclude the application of certain general rules of international law. In this case, these agreements may be intended to establish *lex specialis.* In our current globalised world, where polluting activities are frequently carried out by foreign companies within developing nations, it makes perfect sense that states wish to channel liability in the event of transboundary damage to those foreign operators.[170]

As discussed, such similar provisions may serve as evidence of customary law only to the extent that they align with actual state behaviour and are accompanied by *opinio juris*. The treaties discussed in this chapter generally fail to encompass the majority of the international community. They also lack a general character, that is, they regulate a narrow range of situations in which transboundary damage may occur, leaving many scenarios outside their scope. In addition, most of those treaties lack ratification by a large number of parties, with several of them not yet in force. Finally, given the repetition of transboundary damage in everyday life, this group of treaties does not reflect a consistent pattern of state behaviour.[171] As a result, there is little indication that this repetition

[170] Refer, generally, to Elizabeth C Black, 'Litigation as a Tool for Development: the environment, human Rights, and the case of Texaco in Ecuador' (2004) 15 *JPIA* 142.
[171] Bodansky, 'Customary…' (n 135) 111.

of treaties constitutes evidence of existing rules of customary international law (*lege lata*). Accordingly, this proliferation of treaties may be best interpreted as a response to the absence of customary norms applicable to the subject, rather than an evidence of their existence. They reveal the aspiration of states to regulate areas where transboundary damage is of emerging concern, enacting conventional norms as their parties believe the law should be (*lege ferenda*).

Conclusion

The present chapter assessed the common aspects of treaty provisions that define what transboundary damage is legally relevant and deserves reparation, as well as the preferred form of its reparation. This discussion revealed that, over time, this group of treaties evolved from provisions on compensation for damage to property and persons, to later include a progressively larger concept of relevant damage that included damage to the environment.

Overall, this assessment revealed that, across time, their parties have progressively agreed on provisions recognising the reparability of a growing number of aspects of environmental damage. Whilst their provisions may not always be aligned with actual state practice, those treaties do not, by themselves, suffice to establish the existence of customary norms. Notwithstanding, when aligned with similar developments in this field of international law, their provisions may influence and help shape state behaviour, and therefore contribute to the crystallization of a customary obligation to provide reparation for transboundary damage to the environment.

Chapter 6 – International Practice:
The Findings of the UN Compensation Commission

> *'In the view of the Panel, there is no justification for the contention that general international law precludes compensation for pure environmental damage'.*[1]
>
> UNCC Governing Council Panel of Commissioners

The issue of state responsibility for environmental damage gained particular prominence following Iraq's invasion of Kuwait in 1991. The extensive damage resulting from the conflict led the UN Security Council (UNSC) to hold Iraq accountable for the damage arising from the war. This led to the UNSC to establish the United Nations Compensation Commission (UNCC), tasked with compensation for that damage, including claims for pure environmental damage on a scale unprecedented in international practice.[2]

[1] UNCC Governing Council Panel of Commissioners, 'Report And Recommendations Made By The Panel Of Commissioners Concerning the Fifth Instalment of "F4" Claims' (30 June 2005) UN Doc S/AC.26/2005/10 (Fifth Instalment), Para 58.
[2] Cymie R Payne, 'Environmental Claims in Context' in Cymie R Payne and Peter R Sand (eds), *Gulf War Reparations and the UN Compensation Commission: Environmental Liability* (OUP 2011), 3-5; also, UNSC Res 687 (3 April 1991) UN Doc S/RES/687 (Resolution 687(1991).

This chapter will discuss the handling of environmental damage and its reparation within the UNCC. After briefly discussing the Commission's background, this chapter will explore the disposition of the subject within the UNCC. From its definition of relevant damage to the environment of other states, the chapter will progress to revise the forms of redress considered adequate to compensate for pure environmental damage.

A limitation to this analysis lies in the fact that, to date, the UNCC has not released the full details of individual claims or the full reasoning behind their resolution. This restricts a deeper examination on the debates, motivation, and reasoning behind the awards.[3] However, the reliability and richness of detail of the published Panel Reports and Governing Council Decisions provide a basis to assess the Commission´s treatment of environmental damage for the purposes of this thesis.[4]

1. Background and Creation of the United Nations Compensation Commission (UNCC)

On 2 August 1990, Iraqi troops invaded the territory of Kuwait, starting an occupation which would last several months.[5] The United Nations Security Council (UNSC) swiftly voted on the illegality of the invasion. In a Resolution, the Council demanded the immediate withdrawal of all troops from Kuwaiti territory.[6] After a year of fruitless negotiations, a

[3] GC Decision 10 (n 22) Article 30.
[4] Cymie Payne, 'Guidance for Researchers' in Cymie R Payne and Peter R Sand (eds), *Gulf War Reparations and the UN Compensation Commission: Environmental Liability* (OUP 2011), 271-272.
[5] John N Moore, 'Iraq's Aggression against Kuwait: Enforcing the Rule of Law in the Gulf Crisis' (1991-1992) 4 *J Contemp Legal Issues* 1, 1 .
[6] UNSC Res 660 (2 August 1990) UN Doc S/RES/660(1990).

coalition of states intervened to end the illegal occupation.[7] Despite being quickly defeated,[8] during their withdrawal, Iraqi troops set alight hundreds of Kuwait's oil wells. This resulted in the spilling of large quantities of oil in the surrounding areas, with extensive damage to the Kuwaiti environment and that of surrounding states. A month later, the states agreed on a ceasefire which would involve the Iraqi acceptance of full responsibility for the damage resulting from the war.[9]

The Gulf War led to the displacement of millions of people and left a trail of devastation among which were a large number of blazing oil wells and vast tracts of contaminated land. The deliberate environmental damage caused during the withdrawal shocked the international community[10] and resulted in what is considered one of the worst environmental disasters in human history.[11] From the conflict's onset, the UN Security Council issued several resolutions warning the Iraqi government of the consequences of its actions and holding Iraq liable for all resulting losses.[12] After the withdrawal, Resolution 687(1991) provided for the removal of all Iraqi

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[7] Payne, 'Environmental Claims…' (n 2) 3-5.
[8] Veijo Heiskanen, 'The United Nations Compensation Commission', (2002) *RDC* 259, 266.
[9] Payne, 'Environmental Claims…' (n 2) 3-5; also Luan Low and David Hodgkinson, 'Compensation for Wartime Environmental Damage: Challenges to International Law after the Gulf War' (1995) 35 *Va J Int'l L* 405, 408-412; Walter G Sharp Sr, 'The Effective Deterrence of Environmental Damage during Armed Conflict: A Case Analysis of the Persian Gulf War' (1992) 137 *Mil L Rev* 1, 40-45.
[10] Low and Hodgkinson (n 9) 406.
[11] Samira A S Omar *et al*, 'The Gulf War impact on the Terrestrial Environment of Kuwait: An Overview' in Jay E Austin and Carl E Bruch (eds), 'The Environmental Consequences of War' (CUP 2000), 317; also Mahmood Y Abdulraheem, 'War-Related Damage to the Marine Environment in the Rome Sea Area' in Jay E Austin and Carl E Bruch (eds), *The Environmental Consequences of War* (CUP 2000), 341; Djamchid Momtaz, 'Les Règles Relatives à la Protection de l'environnement au Cours de Conflits Armés à l'épreuve du Conflit entre l'Iraq et le Koweit'. (1991) 37 *AFDI* 203, 204; also, Adam Roberts, 'Failures in Protecting the Environment in the 1990-1991 Gulf War' *in* Peter Rowe (ed), *The Gulf War 1990–91 in International and English Law* (Routledge 1993), 120
[12] UNSC Res 670 (25 September 1990) UN Doc S/RES/670; also, UNSC Res 674 (29 October 1990) UN Doc S/RES/676; UNSC Res 686 (2 March 1991) UN Doc S/RES/686.

weapons of mass destruction[13] and reaffirmed its liability[14] for all direct losses and damage resulting from the war, among which was damage to the environment and natural resources.[15] It also provided for the creation of a reparation fund and a compensation commission to deliberate on claims of compensation as a result of the war.[16]

1.1. The UNCC and its Activity

Following the ceasefire, the UNSC approved Resolution 687(1991), which outlined the specific terms of the ceasefire and recorded Iraq's acceptance of responsibility for all damages resulting from the conflict. This led to the creation, a month later,[17] of the UNCC as a subsidiary organ of the Security Council.[18] With competence to resolve compensation claims for the damage resulting from the war,[19] the UNCC also addressed Iraq's liability for environmental damage resulting from the war.[20]

Overall, the UNCC received over 2.6 million claims, amounting to a total of US$300m billion, US$85billion of which related to compensation for

[13] UNSC Res 687 (1991) (n 2) Para 8-12.
[14] UNSC Res 687 (1991) (n 2) Para 16 ; also Hans van Houtte et al, 'The United Nations Compensation Commission', *in* Pablo de Greiff (ed) *The Handbook of Reparations* (OUP 2006), 324; also Low and Hodgkinson (n 9) 456.
[15] UNSC Res 687 (1991) (n 2) Para 16.
[16] Ibid, Para 18; also, Heiskanen (n 8) 266.
[17] UNSC Res 692 (20 May 1991) UN Doc S/RES/692, Para 18.
[18] UNSC, 'Report of the Secretary-General Pursuant to Paragraph 19 of SC Resolution 687' (2 May 1991) UN Doc S/22559, Para 4.
[19] UNSC Res 687 (1991) (n 2) Para 18.
[20] UNCC Governing Council, 'Report and Recommendations Made by The Panel of Commissioners Concerning the First Instalment Of "F4" Claims' (22 June 2001) S/AC.26/2001/16 (First Instalment), Para 7.

environmental damage.[21] Within its structure, the UNCC counted a Governing Council (GC), a Secretariat, and Panels of Commissioners. The GC exercised legislative functions, with authority for decision-making and policymaking, and was assisted by the Secretariat. The Panels of Commissioners were comprised of three experts in their areas. They performed the *quasi-judicial* functions, submitting recommendations to the GC, which made final decisions.[22]

Given the large number and broad scope of UNCC claims, claims were organised into six categories (labelled from A to F). Claims of compensation for environmental damage were allocated in the fourth subgroup of the group "F" of claims. Thus, those claims were referred to as "F4" claims, and the responsible Panel of Commissioners labelled the "F4" Panel.[23] They were the last claims to be examined in the UNCC activity.[24] Given their large number, "F4" claims were classified in five instalments, according to their nature.[25] From US$85billion claimed in

[21] Mojtaba Kazazi, 'The UNCC Follow-up Programme for Environmental Awards', *in* Tafsir M Ndiaye and Rudiger Wolfrum (eds), *Law of the Sea, Environmental Law and Settlement of Disputes: Liber Amicorum Judge Thomas A. Mensah* (Martinus Nijhoff 2007), 1111.
[22] UNCC Governing Council Decision 10 (26 June 1992) S/AC 26/1992/10 (Rules and Claims Procedures) (GC Decision 10), Article 33. Gomez has noted that its *quasi-judicial* nature results from the absence of controversy over Iraq's liability and that it only remained for the Panels to determine causality. Refer to Mariano J Aznar-Gomez, 'Environmental Damages and the 1991 Gulf War: Some Yardsticks Before the UNCC' (2001) 14 *LJIL* 303, 310; also, Heiskanen (n 8) 270-272; Marco F di Rattalma and Tullio Treves (eds), *The United Nations Compensation Commission: A Handbook* (Kluwer 1999), 13.
[23] Heiskanen (n 8) 276-287; also, First Instalment (n 20) Para 5,
[24] Payne, 'Environmental Claims…' (n 2) 1,
[25] UNEP Working Group of Experts, 'Conclusions by the Working Group of Experts on Liability and Compensation for Environmental Damage Arising from Military Activities' in Alexandre Timoshenko (ed), *Liability and Compensation for Environmental Damage: Compilation of Documents* (UNEP 1998), 60; also, First Instalment (n 20) Para 12-16.

compensation, the "F4" Panel awarded over US$5billion in compensation for environmental damage, which still represented a significant amount.[26]

2. General Issues

Before discussing the UNCC decisions on our subject, it is worth addressing some debates surrounding the UNCC creation and activity, which potentially relate to its credibility and the relevance of its decisions as precedents in international law. These relate, in particular, to the discussion over the legality of its institution and whether its decisions were based on international law or relied on specific rules of law.

2.1. Legality of its Institution

It was not a novelty in UN Security Council practice to assert the liability of a state as a result of the wrongful use of force. However, Resolution 687 (1991) was the first of its kind to impose liability on an aggressor and create a compensation commission for the reparation of war damage.[27] This led some to doubt whether the UNSC acted within the UN Charter,

[26] Result of the sum of the amounts involved in the five F4 Panel reports. First Instalment (n 20); UNCC Governing Council Panel of Commissioners, 'Report and Recommendations Made by The Panel of Commissioners Concerning the Second Instalment of "F4" Claims' (3 October 2002) UN Doc S/AC.26/2002/26 (Second Instalment); Third Instalment (n 42); UNCC Governing Council Panel of Commissioners, 'Report and Recommendations Made by The Panel of Commissioners Concerning Part One of the Fourth Instalment of "F4" Claims' (9 December 2004) UN Doc S/AC.26/2004/16 (Fourth Instalment(I)); UNCC Governing Council Panel of Commissioners, 'Report and Recommendations Made by The Panel of Commissioners Concerning Part Two of the Fourth Instalment Of "F4" Claims' (9 December 2004) UN Doc S/AC.26/2004/17 (Fourth Instalment(II)); Fifth Instalment (n 1).

[27] Peter H Sand, 'UNCC - Compensation for Environmental Damage from the 1991 Gulf War' 2005 (35) 6 *EPL* 244, 245; also, Peter H Sand, 'Environmental Principles Applied' in Cymie R Payne and Peter R Sand (eds), *Gulf War Reparations and the UN Compensation Commission: Environmental Liability* (OUP 2011), 171.

that is, whether it had the power to create a compensation commission with judicial authority to adjudge compensation claims.[28] In response, UN Secretary-General Javier Perez de Cuellar clarified that the UNCC was not an organ of strictly judicial nature. Since its powers were restricted to fact-finding, claims examination, loss assessment, and resolving disputed claims, he believed it had a *quasi-judicial* nature.[29] Some commentators agreed with this aspect, since the Panels of Commissioners did not adjudge claims, but made recommendations to the Governing Council, which would later determine the amounts to be paid in compensation.[30]

Scholars dissented on whether the Security Council could impose a reparation regime. Some believed that this aspect of Resolution 687 (1991) was incompatible with the UN Charter.[31] To these scholars, the UNSC had exceeded its powers when it delegated a judicial authority to the UNCC which it did not possess.[32] However, a larger group of scholars

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[28] Heiskanen (n 8) 307. Another ground for criticism was the fact that the Resolution based liability purely on the unlawfulness of aggression. Refer to Stephanie N Simonds, 'Conventional Warfare and Environmental Protection: A Proposal for International Legal Reform' (1992) 29 *SJIL* 165, 179.

[29] UNSC, Report of the Secretary-General (n 18) Para 25.

[30] Rattalma and Treves (n 27) 13; see also, Danio Campanelli, 'The United Nations Compensation Commission (UNCC): Reflections on Its Judicial Character' (2005) 4 *LPICT* 107, 138.

[31] Gaetano Arangio-Ruiz, 'On the Security Council's "Law Making"', (2000) 83 *RDI* 609, 715-719; also, P D'Argent, 'Le Fonds e la Commission de Compensation des Nations Unies' in 1992(2) *RBDI* 486, 487; also Aznar-Gomez (n 4) 305; B Graefrath, 'Iraqi Reparations and the Security Council' (1995) 55(1) *ZFAORUV* 1, 26-33. With a more nuanced view, Sur has noted Iraq's consent has an *estoppel* effect, preventing Iraq from later arguing the nullity of the Resolution. See Serge Sur, 'La Résolution 687 (3 avril 1991) du Conseil de Sécurité dans l'affaire du Golfe: Problèmes de Rétablissement et de Garantie de la Paix' (1991) 37 *AFDI* 25, 39-43. Gilles Cottereau has noted, in this regard, that the Security Council acts "as it wishes" and appears to act out of its mandate. See Gilles Cottereau, 'Problèmes de la Responsabilité de l'Iraq Selon la Résolution 687' (1991) 37 *AFDI* 99, 117. More generally, Nigel White and Robert Cryer have pointed out that the Security Council was never envisaged to act as 'a coercive enforcer of all international law'. See Nigel D White and Robert Cryer, 'Unilateral Enforcement of Resolution 687: A Threat too Far' (1999) 29 *CWILJ* 243, 248.

[32] Heiskanen (n 8) 307. Another ground for criticism was the fact that the Resolution based liability purely on the unlawfulness of aggression. Refer to Stephanie N Simonds,

appeared to agree that Resolution 687 (1991) was compatible with previous UNSC practice and in accordance with the doctrine of implied powers. According to this doctrine, UN principal organs may create subsidiary bodies as necessary to fulfil their mission. In these cases, the institution of judicial bodies does not involve power delegation.[33] Similar decisions had been taken in the past,[34] such as the one which led to the International Criminal Tribunals for the former Yugoslavia (ICTY) and Rwanda.[35] Moreover, they argued, the legality of the practice was confirmed by the ICJ in the *Administrative Tribunal Case*.[36] As a result, most scholars seemed to agree on the legality of the creation and activity of the UNCC,[37] and that its novelty was limited to its competence for arbitrating compensation for war damage.[38]

'Conventional Warfare and Environmental Protection: A Proposal for International Legal Reform' (1992) 29 *SJIL* 165, 179.

[33] *Effect of Awards of Compensation Made by the United Nations Administrative Tribunal* [1954] 47 ICJ Rep 47 (Administrative Tribunal Case), 61. See also, *Application for Review of Judgment No. I58 of the United Nations Administrative Tribunal Case*, [1973] ICJ Rep 166, Para 16; also, *Tadic Case (Decision of 2 October 1995)* ICTY-94-1, Para 38.

[34] Repertory of Practice of United Nations Organs vol. 1, available on <https://legal.un.org/repertory/dtSearch/Search_Forms/dtSearch.html> accessed 23 June 2021, Article 22, Para 28, 64-147; and Paulus, 'Article 29' in Bruno Simma et al (eds), *The Charter of the United Nations: A Commentary* (2nd ed, OUP 2002), 540-541.

[35] Gaetano Arangio-Ruiz, 'The 'Federal Analogy' and UN Charter Interpretation: A Crucial Issue' (1997) 1 *EJIL* 1, 2-3; and Sarooshi (n 35) 422-425; Heiskanen (n 8) 307-309 and 308 fn 177; Monday Dickson, 'Legal Issues in the United Nations Compensation Commission on Iraq' (2013) 14 *JLP&G* 21, 28; Charter of the United Nations (adopted 26 June 1945 into force 24 October 1945) 1 UNTS XVI, Article 7 and 29. Other examples are the Iraq-Kuwait border Demarcation commission, the UN War Crimes Tribunals to judge crimes committed in Rwanda and after the dissolution of former Yugoslavia. Refer to Danesh Sarooshi, 'The Legal Framework Governing United Nations Subsidiary Organs' (1997) 67(1) *BYIL* 413, 422-425.

[36] *Administrative Tribunal Case* (n 33) Para 16

[37] Heiskanen (n 8) 390; also Houtte et al (n 14) 326; also Andrea Gattini, 'The UN Compensation Commission: Old Rules, New Procedures on War Reparations' (2002) 13(1) *EJIL* 161, 161; Cesare P R Romano, 'Woe to the Vanquished - A Comparison of the Reparations Process after World War I (1914-18) and the Gulf War (1990-91)' (1997) 2 *Austrian Rev Int'l & Eur L* 361, 371.

[38] Elyse J Garmise, 'The Iraqi Claims Process and the Ghost of Versailles' (1992) 67(4) *NYULR* 840, 842; also, Heiskanen (n 8) 390.

2.2. Applicable Law to Claim Resolution

Another important aspect of the UNCC is whether its decisions were grounded on general international law, or in special legal sources which were applicable exclusively to the conflict. According to Governing Council (GC) Decision 10, claims would be primarily resolved based on Security Council resolutions,[39] which initially led some authors to question whether its decisions would be sufficiently grounded on international law to be valid as precedents.[40]

To elucidate this and similar questions, the United Nations Environmental Programme (UNEP) commissioned a Working Group of Experts on Liability for Environmental Damage (UNEP Working Group of Experts),[41] which aimed to orient claimants and commissioners in forwarding their claims and performing their tasks. The final report of the Working Group concluded that claims should be primarily resolved on the basis general international law, among which the law responsibility of states, equitable principles, treaties not applicable to relevant claims, and *soft law*.[42] Scholars agreed that Iraqi acts violated an extensive range of primary

[39] UNCC GC, Decision 10 (n 22) Article 31.
[40] Timothy J Feighery, 'The Jurisprudential Legacy of the UNCC Legal Issues Common to All Claims Categories' in Christopher Gibson et al (eds), War Reparations and the UN Compensation Commission Designing Compensation after Conflict (OUP 2015), 188-189; also, David J Bederman, 'The United Nations Compensation Commission and the Tradition of International Claims Settlement' (1994) 27 *NYUJILP* 1, 41; Jose R Allen, 'Points of Law' in Cymie R Payne and Peter R Sand, *Gulf War Reparations and the UN Compensation Commission: Environmental Liability* (OUP 2011), 143.
[41] UNEP Working Group of Experts, 'Conclusions by the Working Group…' (n 25) Para 30-40; also, UNCC Governing Council Decision 7 (Additional Categories of Claims) (17 March 1992) UN Doc S/AC 26/1991/7/Rev 1 (Decision 7).
[42] UNEP Working Group of Experts, 'Conclusions by the Working Group…' (n 25) Para 3-7; and UNCC Governing Council Panel of Commissioners, 'Report and Recommendations Made by The Panel of Commissioners Concerning the Third Instalment Of "F4" Claims' (18 December 2003) UN Doc S/AC.26/2003/31 (Third Instalment), Para 429.

rules of international law.[43] As a result, they expected reparation to be established in accordance with principles and rules of state responsibility.[44]

2.3. The Relationship Between the UNCC and International Customary Law

The identification of customary norms is paramount for international environmental law, particularly given the subject's fragmentary character. Given the frequent gap between statements and actual state behaviour in the field,[45] academics have described the identification of customary norms of international environmental law a "painstaking exercise",[46]

[43] Cf Laura Edgerton, 'Eco-Terrorist Acts during the Persian Gulf War: Is International Law Sufficient to Hold Iraq Liable' (1992) 22 *Ga J Int'l & Comp L* 151, 165; Natalino Ronzitti, 'Reparation and compensation' in Nigel D White and Christian Henderson (eds), *Research Handbook on International Conflict and Security Law: Jus Ad Bellum, Jus in Bello and Jus Post Bellum* (Edward Elgar 2013), 638-659; also Silja Voneky, 'Peacetime Environmental Law as a Basis of State Responsibility for Environmental Damage Caused by War', in Jay E Austin and Carl E Bruch (eds), *The Environmental Consequences of War* (CUP 2000), 190-191 and 194-213; Simonds (n 32) 179; Dame Hazel Fox, 'Reparations and State Responsibility: Claims Against Iraq Arising out of the Invasion and Occupation of Kuwait', in Peter Rowe (ed) *The Gulf War 1990–91 in International and English Law* (Routledge 1993), 235.

[44] Veijo Heiskanen and Nicolas Leroux, 'Applicable Law' in Christopher Gibson et al (eds), *War Reparations and the UN Compensation Commission Designing Compensation after Conflict* (OUP 2015), 75-78; also, Simonds (n 32) 179; and Low and Hodgkinson (n 9) 413; and Gattini (n 37) 162; Adam Roberts, 'The Law of War and Environmental Damage' in Jay E Austin and Carl E Bruch (eds), *The Environmental Consequences of War* (CUP 2000), 83; see also Low and Hodgkinson (n 9) 406; Kennet R Hoffman, 'State Responsibility in International Law and Transboundary Pollution Injuries', 25 *ICLQ* 509 (1976), 511; Roberts, 'Failures…' (n 11) 101; Momtaz (n 9) 207-210; Shilpi Gupta, 'Iraq's Environmental Warfare in the Persian Gulf' (1993) 6 *GIELR* 251, 255-258; Rattalma and Treves (n 27) 18. More generally, see Yoran Dinstein, 'Protection of the Environment in International Armed Conflict', (2001) 5 *Max Planck Yearbook of United Nations Law* 523, 524 and 543-544. cf Laura Edgerton, 'Eco-Terrorist Acts during the Persian Gulf War: Is International Law Sufficient to Hold Iraq Liable' (1992) 22 *Ga J Int'l & Comp L* 151, 165; Leroux (n 44) 75-78; also Simonds (n 32) 179.

[45] Refer to Chapter 5; also, Daniel Bodansky, *The Art and Craft of International Environmental Law* (CUP 2009), 197-198; also, UNGA, 'Gaps In International Environmental Law And Environment-Related Instruments: Towards A Global Pact For The Environment' (2018) UN Doc A/73/419, Para 4; also, Pierre-Marie Dupuy et al, 'Customary International Law and the Environment' (2018) 2 *C-EENRG Working Papers* 1, 4.

[46] Dupuy et al (n 45) 5.

noting that it is often unclear when the status of a norm shifts from a soft-law statement to that of customary international law.[47]

As previously discussed, the formation of customary law relies primarily on two factors: state practice and *opinio juris*.[48] Still, judicial awards play an important role in both the identification and progressive development of customary international law, including that concerning the environment.[49] The Statute of the International Court of Justice (ICJ) provides, in its Article 38(1)(d), that judicial decisions represent subsidiary means for the determination of international law.[50] However, the precise value of judicial decisions as primary sources of international law is somewhat controversial. Some scholars consider precedents to be as valuable as any of the sources listed in the preceding subparagraphs.[51] Others argue that Article 38(1) distinguishes between formal primary sources of international law (treaties, custom, and general principles) from subsidiary means for their determination (judicial decisions and scholarly writings).[52] To Fitzmaurice, judicial decisions 'are not in the strict sense formal sources of law'.[53] Similarly, Akenhurst regards international

[47] Ibid, 7.
[48] Refer to Chapter 5, Section 4.2.
[49] Cymie Payne, 'Judicial Development' in Lavanya Rajamani et al (ed), *The Oxford Handbook of International Environmental Law* (OUP 2021), 454; also, Patricia Birnie et al, *International Law and The Environment* (3rd edn, OUP 2009), 38; Philippe Sands et al, *Principles Of International Environmental Law* (3edn, CUP 2012), 179.
[50] 1945 Statute of the International Court of Justice (26 June 1945, into force 24/10/1945), Article 38(1).
[51] Robert Jennings, 'The Judiciary, International and National, and the Development of International Law', 45 ICLQ (1996) 1, 3-4
[52] Aldo Z Borda, 'A Formal Approach to Article 38(1)(d) of the ICJ Statute from the Perspective of the International Criminal Courts and Tribunals' (2013) 24(2) *EJIL* 649, 652-653.
[53] Gerald G Fitzmaurice, 'Some Problems Regarding the Formal Sources of International Law' in Martti Koskenniemi, *Sources of International Law* (Routledge 2000), 170.

awards primarily as evidence of international law, with their influence largely dependent 'on the quality of [their] reasoning'.[54]

This is expressed in the ILC's Draft Conclusions on the Identification of Customary International Law, which classify judicial decisions as a means of *determination* of customary rules.[55] In practice, however, since precedents within the same court tend to be followed in similar cases, this expectation makes them influential in the shaping of state practice.[56] Awards of international courts and arbitral tribunals contribute to the clarification of customary international law, with their influence depending on the authority of that body and the quality of its reasoning.[57] In particular, ICJ decisions on customary law tend to exert considerable influence on other international tribunals, often leading to voluntary compliance by states.[58] For these reasons, international arbitration may play a relevant role in the further development and crystallisation of customary international law.[59]

However, when considering the precedential value of UNCC awards, one should bear in mind that their reasoning may clarify the existing law but does not evidence general practice or *opinio juris*. Nonetheless, despite

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[54] Michael Akenhurst, 'The Hierarchy of the Sources of International Law' (1976) 47(1) *BYIL*, 276, 280.
[55] ILC, 'Draft Conclusions on the Identification of Customary International Law' (2018) UN Doc. A/73/10 (ILC Draft Conclusions), Conclusion 13.
[56] Vladyslav Lanovoy, 'The authority of inter-state arbitral awards in the case law of the International Court of Justice' (2019) 32 *LJIL* 561, 566.
[57] Patrick Dumberry, 'The Role and Relevance of Awards in the Formation, Identification and Evolution of Customary Rules in International Investment Law' (2016) 33(3) *JIA 271,* 274
[58] Alberto Alvarez-Jiménez , 'Methods For The Identification Of Customary International Law In The International Court Of Justice's Jurisprudence: 2000–2009 (2011) 60(3) *ICLQ* 681, 683-685.
[59] Malgosia Fitzmaurice, 'The International Court of Justice and Environmental Disputes' in Duncan French et al (eds), *International Law and Dispute Settlement: New Problems and Techniques* (Hart 2010), 17.

not being binding on states, international awards contribute to the development of international law with a *de facto* law-changing force.[60] Once the UNCC fulfilled its mandate, it ceased to exist. International courts are not expected to follow UNCC precedents without independent reasoning. Notwithstanding, given the quality of their analysis and depth of consideration of environmental reparation, the UNCC´s jurisprudence may have influenced subsequent developments in the field. Scholars have also noted the role of *ad hoc* Tribunals in the identification of customary international law, particularly in underdeveloped or evolving areas of the field.[61] For instance, commentators have highlighted the influence of the International Criminal Tribunal for the Former Yugoslavia on the development of customary norms.[62] It should be noted that, although the UNCC was not a judicial body in the strict sense, the role of international organisations for the formation and expression of customary international law has also been acknowledged elsewhere.[63]

[60] Nico Krisch and Ezgi Yildiz, 'The Many Paths of Change in International Law' in Nico Krisch and Ezgi Yildiz (eds), *The Many Paths of Change in International Law* (OUP 2023), 14

[61] Mia Swart, 'Judicial Lawmaking at the ad hoc Tribunals: The Creative Use of the Sources of International Law and "Adventurous Interpretation"' (2010) 3 *HJIL* 459, 465; also, Joanna Konderla, 'International Customary Law in the Jurisprudence of the ICTY and the ICTR' (2018) 8(2) *WRLA&E* 287, 287-288. In some cases, even domestic court decisions may act as a subsidiary means of determining international law. Refer to: ILC Draft Conclusions (n 56) Conclusion 13(2); also, Anthea Roberts, 'Comparative International Law? The Role of National Courts in Creating and Enforcing international law' (2011) 60 *ICLQ* 57, 59.

[62] Michael P Sharf, 'How the Tadic Appeals Chamber Decision Fundamentally Altered Customary International Law' in Milena Sterio and Michael Scharf (eds), *The Legacy of Ad Hoc Tribunals in International Criminal Law* (CUP 2019), 70-71; also, Milena Sterio and Michael Scharf, 'Conclusion' in Milena Sterio and Michael P Scharf (eds), *The Legacy of Ad Hoc Tribunals in International Criminal Law* (CUP 2019), 359.

[63] Kristina Daugirdas, 'International Organizations and the Creation of Customary International Law' (2020) 31(1) *EJIL* 201, 202; also, ILC, 'Report on the Work of Its Seventieth Session (ILC Draft Conclusions)' (2018) UN Doc. A/73/10, Conclusion 4.

In essence, UNCC should be regarded primarily as a means of elucidating the content of customary international law, subject to the quality of their reasoning in each case. As will be discussed throughout this chapter, the Commission performed a detailed examination of the relevant issues surrounding environmental reparation during its operation. The publication of its reports on claims showed that the "F4" Panel applied the relevant rules of international law applicable to the subject.[64] References to SC Resolutions and GC Decisions seemed largely intended to prevent allegations of excess of mandate.[65]

An assessment of UNCC reports reveals that, in practice, claims were resolved mainly on the basis of rules and principles of international law. For example, the Panel found support for awards in principles and rules of international environmental law,[66] among which provisions within the Rio Declaration,[67] and the *Trail Smelter award (US v Canada).*[68] Accordingly, scholars tend to agree that the Commission's decisions were firmly grounded in international law and, as a result, that they represent a relevant body of jurisprudence that may have contributed to the

[64] Third Instalment (n 44) Para 34.
[65] Allen (n 40) 143-145; also Payne, 'Environmental Claims…' (n 2) 19; David D Caron, 'The United Nations Compensation Commission for Claims Arising out of the 1991 Gulf War: "The Arising Prior to" Decision' (2005) 14 *FSUILJ* 309, 234; Thomas A Mensah, 'Using Judicial Bodies for the Implementation and Enforcement of International Environmental Law', *in* Isabelle Buffard et al (eds)*, International Law between Universalism and Fragmentation: Festschrift in Honour of Gerhard Hafner* (Brill 2009), 801-803; also Sand, 'Environmental…' (n 27) 176.
[66] Third Instalment (n 42) Para 42; also Allen (n 40) 146; Fifth Instalment (n 1) Para 49-58; Second Instalment (n 26) fn 13.
[67] UNGA 'Rio Declaration on Environment and Development' Res 151/26 (16 August 1992) UN Doc A/CONF.151/26(I) (Rio Declaration).
[68] *Trail Smelter arbitration (US v Canada)* (1938) RIAA III 1905 (*Trail Smelter*).

identification of customary international law.[69] As a result, as will be discussed in the following chapter, its awards and discussions later became central to the arguments of claimants international claims.[70]

In essence, the UNCC is generally regarded as instituted within the limits of international law. Environmental awards were primarily grounded in established principles of international law. Rather than an autonomous source of customary law, they represent persuasive evidence of customary law.

3. The Concept of Environmental Damage and Remediation Standards within the UNCC

One of the UNCC's first tasks regarding environmental damage and its compensation was to precisely define transboundary damage in international law, and how much of the damage to the environment, if any, deserved reparation. As discussed, the then available sources of international law were not uniform regarding the extent and scope of the term "damage" or what was subject to compensation.[71] GC Decision 7

[69] Lalanath de Silva, 'Reflections on the United Nations Compensation Commission experience' in Carl Buch et al (eds), *Governance, Natural-Resources and Post-Conflict Peacebuilding* (Earthscan 2011), 768; and Philippe Gautier, 'Environmental Damage and the UNCC: New Directions for Future Environmental Cases?', *in* Tafsir M Ndiaye and Rudiger Wolfrum (eds), *Law of the Sea, Environmental Law and Settlement of Disputes: Liber Amicorum Judge Thomas A Mensah* (Martinus Nijhoff 2007), 191; Feighery (n 40) 188-189; Allen (n 40) 153.

[70] Refer to Chapter 7, Sections 4.1. and 4.2.

[71] Michael T Huguenin *et al*, 'Assessment and Valuation of Damage to the Environment' in Cymie R Payne and Peter R Sand (eds), *Gulf War Reparations and the UN Compensation Commission: Environmental Liability* (OUP 2011), 80-84; also, Ruth Mackenzie and Ruth Khalastchi, 'Liability and Compensation for Environmental Damage in the Context of the Work of the United Nations Compensation Commission' (1996) 5 (4) *RECIEL* 281, 283; de La Fayette, 'The Concept of Environmental Damage…' (n 27) 150.

regulated what types of damage would be covered, and receive compensation, by the UNCC. Its Paragraph 35 provided that 'payments are available with respect to *direct environmental damage* and the depletion of natural resources'.[72] However, the Decision did not define the extent of the term *environmental damage*. Instead, it provided that the term includes 'losses or expenses' as a result of this damage. Aside from costs with abatement and prevention, monitoring and assessment of environmental damage, it provided compensation for expenses with 'reasonable measures […] to clean and restore the environment' already taken or to be taken in future.[73]

GC Decision 7 did not distinguish the relevance of environmental damage based on whether the environment was useful or irrelevant to humans. The Final Report of the UNEP Working Group of Experts clarified that the term "resources" refers to nature's utility to man, notably the market-traded elements of the environment such as oil. On the other hand, "environmental damage" also referred to ecological losses without evident economic value.[74] As a result, to the experts, the provisions of GC Decision 7 were understood to have extended compensation to all elements of the environment, whether or not they had instrumental value

[72] UNCC GC, Decision 7 (n 41) Para 35.
[73] Ibid, para 35(a), (b), and (c).
[74] Allen (n 40) 153. UNEP Working Group of Experts, 'Conclusions by the Working Group…' (n 25) Para 29-30. Overlapping to a certain degree, some claimants used the terms indistinctly. Refer to Low and Hodgkinson (n 9) 464-46; also, Mojtaba Kazazi, 'Environmental Damage in the Practice of the UN Compensation Commission' in Michael Bowman and Alan E Boyle (eds) *Environmental Damage in International and Comparative Law: Problems of Definition and Valuation*. (OUP 2002), 116; UNCC GC, Decision 7 (n 41) Para 3; Huguenin et al (n 71) 80-84.

to humans.[75] This was also the interpretation of the "F4" Panel. The Panel's Commissioners concluded that compensation included but was not limited to the expenses described in Paragraph 35 of GC Decision 7.[76] As a result, during its activity, the "F4" Panel recommended, and the GC granted compensation for a wide array of damages to the environment and its values.

Within the UNCC practice, the "F4" Commissioners found that restoration was the primary objective of environmental remediation, meaning the restoration of 'the damaged environment or resource to the condition in which it would have been' if the aggression had not occurred.[77] In the view of the "F4" Panel, this did not necessarily mean the pursuit or the re-establishment of the exact conditions that previously existed. Instead, to the Panel, restoration should involve all reasonable measures to clean and restore the environment 'in terms of its overall ecological functioning rather than on the removal of specific contaminants or restoration of the environment to a particular physical condition'.[78] In particular, the Panel found that some restoration measures which seek the return to exact physical conditions may produce more harm than positive results. As a

[75] UNEP Working Group of Experts, 'Conclusions by the Working Group…' (n 25) Para 11, 55, and 63-64.
[76] Second Instalment (n 26) Para 22-23.
[77] Third Instalment (n 42) Para 47.
[78] Third Instalment (n 42) Para 48; also, Fourth Instalment I (n 26) Para 50. Here, the Commissioners followed the advice of the UNEP Working Group that, when choosing remediation measures, 'primary emphasis must be placed on restoring the environment to pre-invasion conditions, in terms of its overall ecological functioning rather than on the removal of specific contaminants or restoration of the environment to a particular physical condition'. See UNEP Working Group of Experts, 'Conclusions by the Working Group…' (n 25) Para 55. This standard was later incorporated in the Principles on the Allocation of Loss. See ILC, '2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities' (2006) II (2) *YILC* 59 UN Doc A/CN.4/577, Add.1 and Add.2 (Principles on the Allocation of Loss), Principle 3, Commentary 7.

result, within the UNCC practice, these measures were considered unreasonable.[79]

4. Reparation of Damage to the Environment and Environmental Values within the UNCC Practice

As discussed above, the UNCC saw no restriction to the definition of damage in international law which could exclude the compensability of environmental damage. This resulted in the relevance of pure environmental damage and of a wide array of environmental values. Accordingly, the Commission provided their compensation whenever these losses were found to have been a direct result of the invasion. The "F4" Panel had the task of assessing where losses should lead to compensation, and how this should be calculated. This section will discuss the main categories of compensable losses in the UNCC practice, from claim preparation (referred to as "monitoring and assessment") to the compensation of irreparable losses.

Given the large number of claims and the diversity of topics, the "F4" claims were divided into five instalments. The first of these referred to compensation of costs with monitoring and assessing baseline conditions of harmed areas,[80] which was expressly provided in Decision 7.[81] The

[79] Fourth Instalment I (n 26) Para 50.
[80] *Aerial Herbicide Spraying Case (Ecuador v Colombia)* (Order of 13 September 2013) (Aerial Herbicide) [2013] ICJ Rep 278, Para 10.50-10.58.
[81] UNCC GC, Decision 7 (n 41) Article 35(a); First Instalment (n 20) 12-17; Fifth Instalment (n 1) Para 781-782; Olufemi Elias, 'The UN Compensation Commission and Liability for the Costs of Monitoring and Assessment of Environmental Damage ', in Malgosia Fitzmaurice and Dan Sarooshi (eds), *Issues of State Responsibility Before International Judicial Institutions* (Hart 2004), 235; Cymie R Payne, 'Oversight of Environmental Awards and Regional Environmental Cooperation' in Cymie R Payne and Peter R Sand (eds), *Gulf War Reparations and the UN Compensation Commission: Environmental Liability* (OUP 2011), 111; Allen (n 40) 157-159.

second one referred mostly to claims of the expenditures for abatement and prevention following the damage. The third and fourth instalments assessed claims of compensation with costs of reinstatement and recovery of the environment.[82] In all these cases, damage determination and assessment methodologies were well-established. Finally, the fifth instalment of claims dealt with the especially controversial claims for irreparable environmental damage. They were left until the fifth, final instalment of claims, and their resolution presents most of the innovation in the field.[83]

4.1. Compensation for Monitoring and Assessment Costs

The first task of the "F4" Panel was to assess claims for monitoring and assessment costs. These expenses were incurred to establish the baseline conditions of affected areas and to determine the nature and causal relationship between the damage and the acts of war.[84] In the context of environmental damage, such are often expressive costs, to the extent of deterring of dissuading potential claimants from pursuing legal claims. Within the UNCC activity, these claims amounted to over US$1billion[85] and resulted in awards of over US$243million.[86] In the case of the UNCC, the cost of the monitoring and assessment of environmental

[82] First Instalment (n 20) Para 12-16; also, Second Instalment (n 26) Para 129, 160, 171, 189, 211-341; also, Gautier (n 42) 207.
[83] Fourth Instalment I (n 26) Para 51; also Gautier (n 42) 207; also Cymie R Payne, 'Legal liability for environmental damage: The United Nations Compensation Commission and the 1990–1991 Gulf War' *in* Carl Buch et al (eds), *Governance, Natural-Resources and Post-Conflict Peacebuilding* (Earthscan 2011), 720.
[84] First Instalment (n 20) Para 29.
[85] Ibid, Para 12.
[86] Ibid,Table 14.

damage were expressly provided as part of the broader concept of environmental damage.[87]

One interesting aspect of this category of loss is that the payment of compensation for monitoring and assessment costs happens before a causal relation has been established between the wrongful act and the argued harm. As a result, the Commission did not require conclusive proof of causality. However, compensation for these costs required some evidence of the causal relation between the wrongful act and the alleged harm.[88]

4.2. Compensation for Response Measures and Clean-up Costs

In the second instalment of claims, the "F4" Panel assessed claims of compensation for expenses linked to mitigation and prevention measures as a result of the war, as well as compensation for clean-up and restoration measures. Overall, the second instalment comprised just over US$872million dollars in response measures, which consisted of urgent measures to stop the spread of pollutants and to prevent the aggravation of the damage.[89] The third instalment of "F4" claims comprised five claims of compensation for expenses from clean-up and restoration measures already taken or to be undertaken in future. Overall, these claims totalled just over US$10billion.[90] Finally, the fourth instalment of claims comprised

[87] UNCC GC, Decision 7 (n 41) Para 35.
[88] First Instalment (n 20) Para 29-31.
[89] Second Instalment (n 26) Table 1.
[90] Third Instalment (n 42) Para 1-5.

claims of several countries amounting to US$16,305,459,098 (first part)[91] and just over US$6billion (second part).[92]

The clean-up of damaged environments is generally a requirement for restoration of damaged environments. The UNCC assessed claims of compensation for the costs of measures of clean-up of the environment, such as the removal of oil and other pollutants, clearance of mines, and removal of military fortifications.[93] Clean-up was regarded, not as an end in itself, but as a means to achieve the restoration of the damaged environment. This meant that, in many cases, clean-up was not a requirement for its restoration. At least since the *Torey Canon* episode, it has been well-documented that clean-up measures may further aggravate the harm to the environment.[94] Accordingly, within the UNCC practice, clean-up was not pursued as an aim in itself, but as a means to the restoration of the environment. The "F4" Panel considered that

> 'in assessing what measures are "reasonably necessary to clean or restore" damaged environment, primary emphasis must be placed on restoring the environment […] rather than on the removal of specific contaminants'.[95]

As a result, the Panel considered clean-up claims in reference to their potential to contribute to the commission's main goal, which was material remediation.[96] This meant that, in some cases, clean-up claims were

[91] Fourth Instalment I (n 26) Table 1.
[92] Fourth Instalment (II) (n 54) Table 1.
[93] Third Instalment (n 42) Para 6.
[94] Michael Allaby, *Basics of Environmental Science* (Routledge 2000), 175.
[95] Third Instalment (n 41) Para 48
[96] Ibid, Para 57

rejected as a result of not leading to the best restoration results or for potentially causing additional harm to the environment. In some cases, it added, the result of efforts to completely remove contaminants could lead to more negative than positive results. As a result, some clean-up proposals were considered unreasonable.[97] For example, in *Claim No. 5000450 (Kuwait v Iraq)* Kuwait sought compensation for the cost of removing large quantities of pollutants from square kilometres of desert areas. It argued that the material degraded the ecosystem, with loss of vegetable cover.[98] However, in the view of the panel, the removal of the pollutant could cause further damage to the environment and impair the ongoing natural recovery, with an actual reduction in the chances of restoration of the area.[99] In other cases, however, the excavation and removal of oil from coastal areas was considered a reasonable and necessary measure. For example, in *Claim 5000259 (Kuwait v Iraq)* Kuwait sought compensation for the cost of removing contaminants from coastal areas, to allow the ecosystems to recover.[100]

4.3. Compensation for Measures Necessary for Environmental Recovery

4.3.1. Compensation for the Cost of Passive or Natural Ecological Recovery

In addition to the discussed expenses, the "F4" Panel calculated compensation for damage to the environment on the basis of the cost of its reinstatement. There are two main approaches to the restoration of natural environments. The first of them is passive or natural recovery,

[97] Fourth Instalment I (n 26) Para 50
[98] Third Instalment (n 41) Para 120-126
[99] Ibid, Para 127
[100] Fourth Instalment I (n 25) Para 170-182.

which is a restoration technique that opposes manipulative interventions on ecosystems. Instead, it favours its protection by keeping it free from human interference, so that its resources can recover through natural regeneration processes. That means letting "nature run its course".[101] To Iraq, this should be the preferred route for restoration.[102]

The Commissioners agreed that, in some cases, natural remediation would be sufficient to achieve restoration goals.[103] For example, in *Claim 5000450 (Kuwait v Iraq)* the Commissioners found that fencing would suffice to reach restoration goals for most of the affected area.[104] Similarly, in *Claim 5000450 (Kuwait v Iraq)* regarding areas outside Wadi Al Batin, the Panel found that, despite the contamination of the area, the material present was not toxic and did not impair the natural recovery of the area. The award found that natural regeneration of the area was already taking place, and, in time, natural regeneration processes would lead to the area's complete recovery.[105] However, for the areas inside Wadi Al Batin, the Panel found that active measures would be needed to allow restoration. As a result, reparation should include funding for the removal of contaminants through excavation, followed by backfilling with clean soil.[106]

[101] Susan P Bratton, 'Alternative Models of Ecosystem Restoration' in William Throop (ed), *Environmental Restoration: Ethics, Theory and Practice* (Humanity 2000), 55.
[102] Third Instalment (n 42) Para 48.
[103] Ibid, Para 48.
[104] Ibid, Annex V, Para 4.
[105] Fourth Instalment (II) (n 54) Para 75, 95 and Annex II, Para 6.
[106] Fourth Instalment (II) (n 54) Annex II, Para 1-5.

4.3.2. Compensation for the Cost of Implementing Active Remediation Measures

Panel reports reveal that, in several cases, passive remediation was insufficient to lead to the complete regeneration of the harmed environment. In these cases, in addition to passive measures, compensation should also cover the costs with active remediation measures. This was referred to as "on-site measures", or "bioremediation". These are interventions that aim to aid or accelerate natural recovery processes.[107] Active remediation measures were considered reasonable only insofar as they lead to more positive than and negative effects and remained cost-effective.[108] The careful examination of "F4" Panel reports reveals that active measures differed case by case, according to the type of damage.

Among the acceptable active reinstatement measures were the application of organic amendments to the soil to enhance plant recovery, followed by the repeated seeding of the soil to achieve revegetation. This is what happened in *Claim No 5000456 (Iran v Iraq)* where the Commissioners found the measure to be favourable to restoration, and preferable to the use of traditional fertilisers.[109] Another example is *Claim 5000450 (Kuwait v Iraq)* for which the Commission awarded just over US$460million to Kuwait to fund a project which included soil amendment with organic additives followed by replanting of plant species. Given the scale of the project, the award funded the construction of processing facilities near the affected location to produce the soil amendments,

[107] Third Instalment (n 42) Para 48.
[108] Ibid, Para 5.
[109] Fourth Instalment I (n 26) Para 73-77; also, Fourth Instalment II (n 26) Para 95.

seeds, and plant specimens required by the program, as well as an irrigation infrastructure to ensure the success of the project.[110]

Similarly, in *Claim 5000455 (Saudi Arabia v Iraq)* the Panel successfully recommended the award of US$618million for a recovery plan which also included the application of organic soil amendments; the construction of facilities and plant nurseries to reproduce native plant species for later introduction in the affected environment; and the construction of irrigation systems.[111] On the other hand, in *Claim 5000450 (Kuwait v Iraq)* the Panel considered that the restoration of the area within Wadi Al Batin depended on the removal of oil contamination and on active measures of bioremediation, such as the inclusion of organic amendments which would result in a surface prone to revegetation, in order to restore the area's ecological functions.[112] This led to an award of just under US$2billion in compensation for measures needed to restore areas affected by oil contamination.[113]

In *Claim 5000450 (Kuwait v Iraq)* the Panel successfully recommended a recovery plan which included passive and active remediation measures to restore coastal ecosystems. The plan provided funding for filling up excavated trenches with sound soil.[114] Finally, *Claim 5000256 (Kuwait v Iraq)* presents one of the most remarkable examples of active remediation. In that case, the UNCC awarded US$41million to remediate contaminated water aquifers. This included the cost of pumping out 15

[110] Third Instalment (n 42) Para 143-148 and Annex V.
[111] Fourth Instalment I (n 26) Para 243-291 and Annex IV.
[112] Fourth Instalment (II) (n 54) Para 96-102 and Annex II.
[113] Ibid, Para 102-103.
[114] Fourth Instalment I (n 26) Para 175-186 and Annex II.

million cubic meters of contaminated water from these aquifers over several years, followed by the replenishment of the aquifer with potable water. The award also funded the construction of a desalination plant to produce potable water by desalination of seawater.[115]

a) Limitations

An important limitation to active remediation resulted from the requirement that these remained reasonable, cost-effective, sustainable, and did not risk further harming the environment. Active measures should not risk reversing ongoing natural recovery[116] or risk harming the territory of other states.[117] Reasonability was assessed on the basis of cost-benefit analysis, revealing whether the expected benefits of proposed measures outweighed their environmental impact. This led to the rejection of these measures in a number of claims, where the Panel opted for the use of passive remediation strategies.[118]

For instance, in claims *5000450 (Kuwait v Iraq)*, *5000451 (Saudi Arabia v Iraq)* and *5000259 (Kuwait v Iraq)* the parties requested compensation for the cost of excavating and removing soil from extensive contaminated areas. The proposals included the removal and transportation of contaminated soil to factories, where the material would be treated for the

[115] Third Instalment (n 42) Para 74-79 and Annex I.
[116] Fourth Instalment I (n 26) Para 9; also Fourth Instalment(II) (n 26) Para 92-93; UNEP Working Group of Experts, 'Conclusions by the Working Group…' (n 25) Para 55; Third Instalment (n 42) Para 50; Olufemi Elias, 'Sustainable Development, War Reparations and Environmental Damage' in Malgosia Fitzmaurice (ed), *Exploitation of Natural Resources in the 21st Century* (Kluwer 2013), 88; Larraine Wilde, 'Scientific and Technical Advice' in Christopher Gibson *et al* (eds), *War Reparations and the UN Compensation Commission Designing Compensation after Conflict* (OUP 2015), 101; Gautier (n 42) 213.
[117] Third Instalment (n 42) Annex VI, Para 3-8.
[118] Fourth Instalment I (n 26) Para 50; Fifth Instalment (n 1) Para 82.

removal of pollutants by high-temperature thermal desorption. The processed soil would then be returned to the original areas and enriched with fertilisers to aid revegetation. In these cases, the Panel considered that the proposed measures were exceedingly costly and risked reducing the chances of successful revegetation. As a result of their risk of causing further harm, these measures were rejected.[119] In these claims, the Panel recommended a modified remediation programme which included the physical fragmentation of soil followed by its later enrichment with organic amendments.[120]

Overall, the actions of the "F4" Panel revealed that the goal of restoration should be the reinstatement of the environment to its previous state. This was understood as the restoration of the environment to a functional state, as opposed to the exact pre-existing material conditions.

4.4. Compensation for Irreversible Environmental Damage and Temporary Losses of Environmental Values

Unlike these previous cases, where the cost of reinstatement of the environment could be readily quantified, in many cases, the damage resulting from the war was so severe that the original environment could not be reinstated. In several other cases, even where recovery could be achieved, this would take decades to complete. During that period, the environment itself and local populations would be deprived of the

[119] Third Instalment (n 42) Para 114-128, 169-186, Annex VI Para 3-8; Fourth Instalment I (n 26) Para 73, 177-187, Annex II.
[120] Third Instalment (n 42) 129, 151, 183-184, and Annex IV.

environmental values (then referred to as “services”) that were originally provided by the area.

Some of the affected states claimed compensation for both these losses. However, unlike the previous discussions, at the time of the Commission’s activity, there was no clarity in international law on how to quantify these losses or to calculate their compensation. At that time, there were no precedents or guidance in international law for this sort of damage. As a result, their compensation represented one of the Panel’s most complex tasks,[121] leading to some of the Commission’s most relevant and innovative decisions on environmental reparation.[122] This particularly complex group of compensation claims comprised the fifth instalment of claims.[123]

The first task of the “F4” Panel, with regard to these losses, was to assess their compensability in international law.[124] In this respect, in the Panel’s words, there was

> no justification for the contention that general international law precludes compensation for pure environmental damage. In particular, the Panel does not consider that [its exclusion] in some international conventions on civil liability and compensation is a valid basis for asserting that international law, in general, prohibits

[121] Fifth Instalment (n 1) Para 88; also, Payne, ‘Legal liability…’ (n 83) 737; Kazazi, ‘Environmental…’ (n 74) 121.
[122] Gautier (n 42) 207-208.
[123] Fifth Instalment (n 1) Para 58.
[124] Aznar-Gomez (n 4) 330.

compensation for such damage in all cases, even where the damage results from an internationally wrongful act.[125]

These claims, referred to as "compensatory remediation", were acceptable in principle. Unlike the previously discussed claims, where damage definition and compensation assessment followed the general trend verified in the then-existing liability regimes,[126] the Panel's practice departed from existing treaty provisions. While most treaties - adopted by then - regarding the reparation of transboundary damage did not provide for the compensation of this sort of damage, the Commissioners found no similar limitation in the law of responsibility of states. To Iraq, this represented a "revolutionary change" in the subject.[127]

Compensatory remediation for irreparable damage was requested in a few claims.[128] In *Claim 5000301 (Iran v Iraq)* the Iranian Government requested compensation for the loss of fisheries resources.[129] In *Claim 5000304 (Jordan v Iraq), Claim 5000460 (Kuwait v Iraq), 5000609 (Saudi Arabia v Iraq)*, *5000609 (Saudi Arabia v Iraq), and 5000463 (Saudi Arabia v Iraq)* claimants requested compensation for the cost of establishing natural reserves which would offset environmental losses. [130] These claims will be discussed below, according to their outcomes.

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[125] Fifth Instalment (n 1) Para 58.
[126] Refer to Chapter 5, generally.
[127] Fifth Instalment (n 1) Para 47; also, Gautier (n 42) 207.
[128] *Claim 5000301* (Iran v Iraq), Fifth Instalment (n 1) Para 155-161.
[129] Fifth Instalment (n 1) Para 155-161.
[130] Fifth Instalment (n 1) Claim *5000304 (Jordan v Iraq) (request of funding to support the creation of reserves),* Ibid, Para 353-387; also, Claim *5000460 (Kuwait v Iraq) (request of funding to create natural preserves),* Ibid, Para 415-448; Claim *5000609 (Saudi Arabia v Iraq) (request of funding to create natural preserves),* Para 587-608; *and* Claim *5000463 (Saudi Arabia v Iraq) (request of funding for ten marine and coastal preserves),* Para 611-630.

4.4.1. Unsuccessful Claims of Compensation for Irreparable Losses

Despite accepting in principle claims of compensatory remediation, an assessment of "F4" Panel reports reveals that most of these compensation claims tended to be either unsuccessful or lead to the award of sums significantly below those claimed. Among unsuccessful claims, some were rejected due to evidentiary[131] and causality issues,[132] given the inability of claimants to prove that the damage resulted directly from the war.[133] Overall, this research identified 12 claims of compensation for irreparable losses, which included 33 requests for compensation (or claim units) for irreparable damage. Of those 33 requests, 27 were rejected as a result of the "F4" Panel's recommendation. 23 of those were rejected for lack of evidence or proof of causality.[134] A further three requests were rejected for overlapping with previous awards.[135] And finally, one claim was rejected for using unreliable assessment techniques.[136]

An analysis of the data reveals that some claims were unsuccessful due to evidentiary issues. For example, in *Claim 5000463* Saudi Arabia requested over US$127million to be used in *a restocking program* of an estimated 100,000 birds. However, the Panel found an overstatement of

[131] e.g. *Claim 5000301 (Iran v Iraq).* See Fifth Instalment (n 1) Para 138-140.
[132] e.g. Ibid*,* Para 215.
[133] The Panel followed the Working Group view that, interpreting Paragraph 16 of SC Resolution 687 (1991), a direct causality relation between the unlawful conduct and the damage needed to be demonstrated. See UNEP Working Group of Experts, 'Conclusions by the Working Group…' (n 25) Para 13; also, First Report Para 6-10 and 31, 34, 59, 302-304. cf Gautier (n 42) 209.
[134] Fifth Instalment (n 1) Para 139, 160, 183, 206, 118, 220, 328, 340, 351, 273, 381, 387, 440, 473, 490, 555, 565, 648, 662, 675, 682, 579, 740, 751, 769.
[135] Fifth Instalment (n 1) Para 427, 606, 608.
[136] Ibid*,* Para 463.

the number of dead birds and their migratory nature. Although finding evidence of some dead specimens, the Panel found it was insufficient to support the magnitude of the program's cost.[137] Other claims used a technique known as habitat equivalency analysis (HEA),[138] which compares actual losses from the harm with proposed gains from proposed interventions,[139] revealing the extent of benefits needed to offset original losses.[140] Although the Panel accepted the methodology in principle, in some cases, it led to unacceptable results.[141] For example, in *Claim 5000304 (Jordan v Iraq)* Jordan requested funding to create 25 million hectares of nature reserves, an area bigger than the whole Jordanian territory, which amounts to less than 10 million hectares. Instead, the Commission awarded funding for managing and removing pressures from the original area to accelerate its recovery.[142] Similarly, *Claim 5000460 (Kuwait v Iraq)* also based the cost on HEA analysis. Again, the Panel found the losses to have been overstated, which resulted in funding for only one of the ten nature reserves claimed for.[143]

The analysis of unsuccessful claims reveals that their unsuccessful outcomes were mostly related to evidentiary obstacles or to the

[137] Fifth Instalment (n 1) Para 650-663.
[138] Ibid*,* Para 73-81, 355-356, 420-424, 606; also, Gautier (n 42) 210; Sand, 'Environmental…' (n 27) 184.
[139] On service-to-service comparison and resource-to-resource restitution, refer to W D Shaw and Marta Wlodarz, 'Ecosystems, Ecological Restoration, and Economics: Does Habitat or Resource Equivalency Analysis Mean Other Economic Valuation Methods Are Not Needed?' (2013) 42(5) *AMBIO* 628; Another alternative is biophysical ecosystem service units. See Pierre Scemama *et al*, 'Using Habitat Equivalency Analysis to Assess the Cost Effectiveness of Restoration Outcomes in Four Institutional Contexts' (2016) 57(1) *Environmental Management* 109, 110.
[140] W D Shaw and Marta Wlodarz (n 139) 631.
[141] Fifth Instalment (n 1) Para 72-81; also Working Group Report (n 41) Para 67.
[142] Ibid*,* Para 355-356 and Annex I, 1-15.
[143] Ibid*,* Para 418.

assessment methodologies used by claimants. Despite the lack of success of most fifth instalment claims, an analysis of available documents suggests that, if adequately brought forward, requests for compensatory remediation can lead to awards that successfully address most forms of environmental losses, as will be discussed below.

4.4.2. Irreparable Losses: Models of Assessment for Compensation

As discussed above, the "F4" Panel found the responsibility of states for irreparable environmental losses. For successful claims, the next task of the Commissioners would be to resolve how to assess compensation for these losses. In this aspect, the Panel did not deviate from the *Trail Smelter award,* asserting that uncertainty did not suffice to deny compensation for transboundary damage, even if that meant assessing damage and its compensation on the basis of reasonable inference.[144] Similarly, the Final Report of the UNEP Working Group found that compensation for environmental damage should not be denied due to uncertainty over the extent of the damage.[145]

There are two competing models of compensation for these losses, which will be discussed below. The Commissioners agreed that international law did not prescribe any particular methodology for their compensation.[146] Although both were equally acceptable in principle, they did not necessarily lead to equally successful claims, as will be discussed below.

[144] Fifth Instalment (n 1) Para 80; also, *Trail Smelter Arbitration (US v Canada)* [1938] RIAA III 1905, Para 1925 and 1950.
[145] UNEP Working Group of Experts, 'Conclusions by the Working Group…' (n 25) Para 43-46.
[146] Fifth Instalment (n 1) Para 80.

a) Compensation for the Monetary Value of Ecological Values

The first base for compensation claims is the monetary value representing the totality of environmental values lost. Environmental economists have developed different models for this assessment, often referring to "environmental values". Environmental economists regard the environment as valuable resources for the human economy, to reveal the 'net economic benefit' of conservation.[147] Their assessments are generally based on the concept of *ecosystem services,* which are the 'economically valuable benefits [that] humans derive from ecological resources directly'.[148] They aim to reveal the instrumental value of natural resources for humans.[149] However, these methodologies have been characterised by the uncertainty of results[150] and subject to criticism.[151]

During the fifth instalment of claims, some claimants relied on these techniques to calculate the amount of compensation requested. Despite accepting their validity in principle, the Commissioners recognised the 'inherent difficulties in attempting to place a monetary value on damaged natural resources, particularly resources that are not traded in the

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[147] Alexander Gillespie, *International Environmental Law, Policy and Ethics* (2nd edn, OUP 2014), 26.
[148] J B Ruhl, 'In Defense of Ecosystem Services' (2015) 32 *Pace Environmental Law Review* 306, 307 .
[149] James Salzman, 'Valuing Ecosystem Services' (1997) 24 *Ecology Law Quarterly* 887, 888. See generally, Adam I Davis, 'Ecosystem services and the Value of Land' 2010 (20) *Duke Environmental Law and Policy* 339, 341-342; Robert Costanza *et al*, 'The Value of the World's Ecossytem Services and Natural Capital' (1997) 387 *Nature* 253, 258-259; Sander Jacobs *et a*l, 'Biodiversity and Ecosystem Services' in Sander Jacobs *et al* (eds), *Ecosystem Services: Global Issues, Local Practices* (Elsevier 2014), 33.
[150] Bryan Norton, 'Commodity, Amenity and Morality. The limits of Quantification in Valuing Biodiversity' in O Wilson (ed), *Biodiversity* (National Academy 1986), 202; also, Jeffrey C Dobbins, 'The Pain and Suffering of Environmental Loss: Using Contingent Valuation to Estimate Nonuse damages' 1993 (43) *Duke Law Journal 879*, 898-943.
[151] Jacobs *et al*, 'Biodiversity and Ecosystem Services' in Sander Jacobs *et al* (eds), *Ecosystem Services: Global Issues, Local Practices* (Elsevier 2014), 33.

market'.[152] As a result, these claims were accepted on a case-by-case basis to the extent to which they were reasonable, as discussed below.[153]

b) Compensation with Reference to the Cost of Equivalent Resources

The second model calculates compensation of losses which cannot be reinstated on the basis of the cost of introducing equivalent elements in the environment. To the Panel this was the general rule in international law for compensating irreparable losses.[154] Referred to as "compensatory remediation", these claims were accepted insofar as the claimant could prove that the original loss could not be addressed by passive or active remediation.[155] As discussed below, most of the successful claims for compensation of irrecoverable loss used this form of assessment.

4.4.3. Irreparable Losses: Successful Claims

a) Compensation for the Temporary Losses of Environmental Values: the Cost of Creating and Maintaining Nature Reserves

The first and largest group of successful claims for compensation for irreparable losses concerned the interim loss of environmental values. These were usually referred to as the ecological benefits, or "services", that the environment would produce if the damage had not occurred but would be unable to provide until its complete recovery.[156] These requests concerned the unavailability of these resources until their complete recovery. Several claimants requested compensation for these losses on

[152] Fifth Instalment (n 1) 81-83.
[153] Ibid, 81; refer to Section 4.4.3 "c".
[154] Ibid, Para 82.
[155] Ibid, Para 82.
[156] Ibid, Para 73; also, Gautier (n 42) 210.

the basis of the cost of creating nature reserves in alternative locations, which were meant to provide similar environmental values to the original area during its recovery period.

In *Claim 5000460 (Kuwait v Iraq)* Kuwait claimed a sum to fund the establishment of shoreline reserves intended to provide ecosystem services for the duration of the recovery process. The Panel upheld this request, awarding funds for creating, operating, and maintaining such nature reserves for 30 years, the estimated time the original areas would take to regenerate completely.[157] Similarly, in *Claim 5000463 (Saudi Arabia v Iraq)* Saudi Arabia requested the cost of creating similar coastal preserves. This led to an award of US$46million in compensation to fund the operation and maintenance of two shoreline reserves totalling 46.3 sq. km for 30 years.[158]

b) Compensation for the Temporary Loss of Environmental Services: The Cost of a Program of Captive Breeding of Animal Species

A rather emblematic case concerned the unavailability of the natural environment for the recovery of populations of animal species. In *Claim 5000307 (Jordan v Iraq)* Jordan argued that the natural habitat of the Arabian oryx and sand gazelles was unavailable for their populations to recover, due to the influx of refugees and livestock in their natural environment. It claimed funds for the breeding and release in the wild of these animal species at a later stage, when their ecosystems would have been fully recovered. The claim led to the award of over US$160million to

[157] Fifth Instalment (n 1) Para 442-453.
[158] Ibid, Para 613-636.

compensate for the cost of their captive breeding for later release into the wild, when circumstances permitted.[159]

c) Compensation of Temporary Losses: Economic Assessments

As discussed above, although accepted in principle, the "F4" Panel neither encouraged nor rejected compensation claims for irreparable losses based on economic assessments, leading to an award significantly below the amount claimed.[160] This research has identified one successful claim for compensation for the economic loss of ecosystem services. However, the award was significantly below the amount claimed. This happened in *Claim 5000288 (Iran v Iraq),* where Iran claimed just over US$1.5million in compensation for damage to rangelands traditionally used as animal breeding grounds. Iran reached this amount through the use of computational models which supposedly reflected the financial value of the ecological services provided by the area. However, to the Panel, the claim overestimated the area and the value of the loss, which led it to award just over US$46,000 in compensation.[161]

4.5. The Duty of Claimants to "Actually Reinstate" the Environment and to Implement Proposed Projects

A final aspect of the UNCC environmental awards which deserves to be mentioned regards the practice of calculating compensation based on the cost of the reinstatement of the environment undertaken or which will be

[159] Ibid, Para 357-364.
[160] Fourth Instalment(II) (n 26) 92-93; also Gautier (n 42) 213; Allen (n 40) 166-167; note Supra 107.
[161] Fifth Instalment (n 1) Para 155-161 and 171-180; also, Gautier (n 42) 208.

undertaken in future. An essential aspect of the UNCC is that its creation aimed to provide relief to thousands of victims of the war. As a result, awards were expected to be used for the actual relief of victims. The scale of damage and Iraq's financial situation following the conflict recommended the responsible use of available funds to alleviate the suffering of the largest possible number of victims. This led the Governing Council to expect claimants to distribute the sums expeditiously to the direct victims of the conflict. Failing to do so led to their obligation to return the sums received to the Compensation Fund, to be made available to other victims.[162]

5. Discussion on UNCC Environmental Awards

5.1. Compensation for Environmental Damage and its Calculation

As discussed in the previous sections, the assessment of the available sources reveals that the "F4" Panel's practice was aligned with the prevailing trends in international law already discussed in earlier chapters. Particularly, it aligned with the provisions in treaties regulating transboundary damage and its reparation. After its in-depth analysis of the problem of reparation of environmental damage in international law, the claim resolution in the "F4" Panel's practice followed the trends already visible in international agreements.

This makes its reports an invaluable guide for future developments, revealing evidence of the status and content of rules on environmental

[162] UNCC Governing Council, Decision 18 (24 March 1994) S/AC26/DEC 18(1994), Para 4-6; also, Payne, 'Oversight…' (n 81) 117.

reparation and their application to real-life events.[163] Although the publicly available documents do not include the complete proceedings, they provide sufficient information to understand the claims, their resolution and the motivation behind them. As a result, they represent an invaluable guide to parties negotiating or engaging in international claims concerning the subject.

This discussion reveals that the practice of the "F4" Panel on environmental reparation reflects the aim to compensate not only for the damage to the environment, but also for the loss of at least some environmental values or "ecosystem services". Overall, the "F4" Panel's practice expressed the compensability of damage to the environment (and environmental values) of other states as compensation for the cost of monitoring and assessment, clean-up and mitigation costs, the actual reinstatement of the environment undertaken in the past or to be undertaken in future, and, where claimed, compensation for temporary loss until the complete recovery of resources.[164] As discussed in the previous sub-sections, the Panel generally calculated the compensation for temporary losses of ecological values based on the cost of introducing equivalent elements into the environment. This led to awards being calculated on the basis of the cost of introducing similar values into the environment.

[163] Arif H Ali and Marguerite C Walter, 'Principles of Valuation Taken from the UNCC Perspective' in Christopher Gibson et al (eds), *War Reparations and the UN Compensation Commission Designing Compensation after Conflict* (OUP 2015), 81.
[164] Fifth Instalment (n 1) Para 80-81.

In some cases, compensation consisted of the cost of creating and maintaining temporary natural reserves in alternative locations, which would offset the temporary losses of ecological values until the complete recovery of harmed areas. These perspectives successfully address the losses of a wide array of environmental resources and values. Overall, this research revealed a trend of at least a partial success for claims requesting compensation based on the cost of reinstatement or the introduction of resources into the environment. While compensation consisted of the payment of sums, these sums tended to reflect the cost of re-establishing plant and animal populations and other environmental values.

5.2. Actual Reinstatement and the Follow-up Program

As seen, the UNCC tended to calculate the compensation for environmental damage on the basis of the cost of restoring the harmed environment and environmental values. This practice appeared to be aligned with several principles of international environmental law. Among them is the common concern of the international community for the environment, a notion which does not always rest easy with the traditional view of national sovereignty.[165] Several international agreements express this general interest in conserving the state of the global environment.[166]

[165] Duncan French, 'Reappraisal of sovereignty in the light of global environmental concerns' (2001) 21(3) Legal Studies 376, 397

[166] Among these can be cited the Convention on Biological Diversity (adopted 5 June 1992, into force 29 December 1993) 1760 U.N.T.S. 69 (CBD); also, The Convention on Wetlands of International Importance, especially as Waterfowl Habitat (adopted 2 February 1971, in force 21 December 1975) 996 UNTS 245 (Ramsar Convention); the Convention for the protection of the world cultural and natural heritage (adopted 16

One of its consequences, is the common interest in the restoration of harmed or destroyed ecosystems and natural environments (since their loss may impact the international community on a local or global scale).

By calculating compensation on the basis of restoration costs, the UNCC successfully addressed this principle, especially through the enforcement of the *actually undertaken* rule through a follow-up program. This put claimants in the position of agents, acting in the interests of the international community.[167] Years later, in the Draft Principles on the Allocation of Loss, the ILC embodied the principle, stating their aim to *'preserve and protect the environment per se as a common resource of the community'.*[168] This led commentaries to refer to states as 'custodian[s] of public property' in the restoration of the natural environment.[169] In this sense, Mushkat refers to a 'planetary trust' jointly managed by states, with the object of 'conserving, protecting and augmenting the object of the trust'.[170]

The UNCC practice in environmental reparation is also compatible with the principle of intergenerational equity, which creates for states the obligation to protect the environment for the sake of future generations.

November 1972, in force 17 December 1975) 1037 UNTS 151 (World Heritage Convention); and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (adopted 3 March 1973, in force 1 July 1975), 993 UNTS 243 (CITES). Also, see Voneky (n 43) 213.

[167] David D Caron, 'The Place of the Environment in International Tribunals' in Jay E Austin and Carl E Bruch (eds), *The Environmental Consequences of War* (CUP 2000), 256-258.

[168] Principles on The Allocation of Loss (n 78) Principle 3, Commentary 1.

[169] Ibid, Principle 2, Commentary 29 and fn 367.

[170] Roda Mushkat, *International Environmental Law and Asian Values Legal Norms and Cultural Influences*. (UBC 2004), 18.

This duty has been enshrined in the Rio Declaration.[171] It results in the responsibility of states 'to each other to ensure that the planet is well cared for'.[172] As expressed in the *Pulp Mills on the River Uruguay case (Argentina v Uruguay)*[173] and *Whaling in the Antarctic case (Australia v Japan; New Zealand intervening)*,[174] scholars believe that the principle may soon become judiciable.[175] Finally, the practice seems compatible with the environment's intrinsic value, and in regarding natural systems *as if they were actual victims which awards should benefit*.[176]

As a result, the enforcement of the *actual reinstatement of the environment* represents a remarkable aspect of the UNCC practice in recognising its intrinsic value, addressing the common concern for the environment, inter-generational equity, and pursuing long-term sustainability.

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[171] UNGA 'Rio Declaration on Environment and Development' Res 151/26 (16 August 1992) UN Doc A/CONF.151/26(I) (Rio Declaration), Principle 3.
[172] Edith B Weiss, 'In Fairness to Future Generations' (1990) 32(3) *Environment* 7, 9; also, Edith B Weiss and United Nations University, '*In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity*' (Transnational 1989), 39.
[173] *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* Judgment (2010) ICJ Rep 14.
[174] *Whaling in the Antarctic (Australia v. Japan; New Zealand intervening)* (Judgment) (2014) ICJ Rep 226, Separate Opinion of Judge Cançado Trindade, Para 47; *Pulp Mills* (n 173) Separate Opinion of Judge Cançado Trindade, Para 122; also, Sand P H, 'Principle 27: Cooperation in a Spirit of Global Partnership' in Jorge E Viñuales (ed) *The Rio Declaration on Environment and Development: A Commentary* (OUP 2015), 392.
[175] Claire Molinari, 'From Right to Development to Intergenerational Equity' in Jorge E Viñuales (ed) *The Rio Declaration on Environment and Development: A Commentary* (OUP 2015), 393.
[176] David D Caron, 'Finding Out What the Oceans Claim: The 1991 Gulf War, the Marine Environment, and the United Nations Compensation Commission' in David Caron and H N Scheiber (eds), *Bringing New Law to Ocean Waters* (M Nijhoff 2004), 394. Also, see Fourth Instalment I (n 26) Para 152.

Conclusion

After Iraq was held responsible for environmental damage resulting from the first Gulf War, the UN Security Council instituted the UNCC to distribute compensation to the parties affected by the war. The Commission saw states as liable for environmental damage, adopting a broad concept of such damage, encompassing both pure environmental damage and the loss of environmental values. Its awards provided compensation for a wide range of restoration-related costs, including claim preparation, clean-up and response measures, as well as passive and active remediation, and compensatory remediation. More strikingly, the UNCC found that claimants had a duty to implement the projects needed to reinstate the environment.

The published UNCC reports shed light on the complexities inherent to the reparation of transboundary environmental damage. As a controversial topic at that time, the Commission´s awards and their reasoning drew attention of states affected by comparable situations.[177] As a result, these decisions may serve as a valuable starting point for those engaged with the topic.[178] They may also have somewhat contributed to the crystallisation of rules applicable to the subject, providing a foundation for discussing the future development of this aspect of the law on state responsibility.[179]

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[177] Heiskanen (n 8) 391.
[178] Thomas A Mensah, 'Foreword' in Cymie R Payne and Peter R Sand (eds), Gulf War Reparations and the UN Compensation Commission: Environmental Liability (OUP 2011), xix
[179] Carl Bruch and Akiva Fishman, 'Institutionalizing Peacebuilding' in Cymie R Payne and Peter R Sand (eds), Gulf War Reparations and the UN Compensation Commission: Environmental Liability (OUP 2011), 240

> *'damage to the environment, and the consequent impairment or loss of the ability of the environment to provide goods and services, is compensable under international law. Such compensation may include indemnification for the impairment or loss of environmental goods and services in the period prior to recovery and payment for the restoration of the damaged environment'.*[1]
>
> International Court of Justice

The preceding chapters revealed a steady trend over, the past four decades, towards recognising the compensability of transboundary environmental damage. From UNCC awards to the various liability agreements adopted, there has been a visible movement towards acknowledging the relevance of such damage in international law.

[1] *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),* Compensation, [2018] ICJ Rep 15 (*Certain Activities*, Compensation, Judgment), Para 42.

The publication of the UNCC's final reports in 2005 was followed by a period of intense debate concerning their consequences of transboundary environmental damage. This chapter examines the developments that followed. It begins with a discussion on the drafting of the International Law Commission´s (ILC) Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities.[2] It will then consider the efforts of the parties to the CBD towards an agreement on the reparation of this type of environmental damage.

Following a brief analysis of the Nagoya - Kuala Lumpur Supplementary Protocol on Liability[3] and its reparation system, the chapter will turn to the recent jurisprudence on the subject. In recent years, four claims related to transboundary environmental damage have been brought before the International Court of Justice (ICJ), giving the Court an opportunity to clarify the applicable law. After examining these developments, this chapter will conclude on their influence on the concept and compensability of transboundary environmental damage.

[2] ILC, '2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities' (2006) II (2) *YILC* 59 UN Doc A/CN.4/577, Add.1 and Add.2 (Draft Principles on the Allocation of Loss).

[3] Nagoya - Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety (adopted 15 October 2010, into force 5 March 2018) UN Doc UNEP/CBD/BS/COP-MOP/5/17.

1. The Concept of Transboundary Damage and its Reparation: The 2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities

Following the ILC's decades-long study of the law of state responsibility for wrongful acts,[4] its work led to the adoption of three documents. In 2001, the Commission approved the Draft Articles on Responsibility of States for Internationally Wrongful Acts (ARSIWA)[5] and the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities (Articles on Prevention).[6]

The Articles on Prevention acknowledged damage to the environment as part of the concept of transboundary damage. Its Principle 2 provided that '"harm" means harm caused to persons, property or the environment'[7] but fell short of defining the term "environment". Although the ARSIWA provided no specific definition of relevant damage, it stated an 'obligation to make full reparation for the injury', defining injury as 'any damage, whether material or moral'.[8] Commentaries to Article 36 recall that UNCC regulations provided for the reparation of environmental damage of affected states. They also reminded states of the reality of damage to the environment, which extend beyond clean-up costs, but also extends to the environment and its values.[9] As a result, these two sets of articles were insufficient to clarify the extent of the relevance of the environment in transboundary contexts. This led to the lack of guidance on the subject

[4] Daniel Bodansky and John R Crook, 'Introduction and Overview' 96 *AJIL* 773, 773.
[5] ILC, 'Draft Articles on Responsibility of States for Internationally Wrongful Acts' (2001) II (2) *YILC* 31 UN Doc A/56/10 (ARSIWA).
[6] ILC, 'Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, with commentaries' (2001) II(2) *YILC* 148 (Draft Articles on Prevention).
[7] Draft Articles on Prevention, Principle 2 (b).
[8] ILC, ARSIWA (n 5) Article 31(1) and (2).
[9] Ibid, Article 36, Commentary 15.

in international law outside situations covered by specific treaty-based regimes.

After the adoption of the discussed documents, the ILC proceeded with the remainder of its mandate, to consider the consequences of transboundary damage resulting from hazardous activities. As discussed in Chapter 4, this is an area where damage frequently affects the natural environment, sometimes with catastrophic effects.[10] Therefore, it would be expected that the resulting document defined which aspects of this damage are relevant and deserve reparation. During the initial stages of its study, the Commission suggested that states were responsible for environmental damage only insofar as it had economic repercussions. This excluded the compensability of damage to the natural environment where it did not appear economically relevant. In his First Report on the Legal Regime for Allocation of Loss in Case of Transboundary Harm Arising Out of Hazardous Activities, Special Rapporteur Pemmaraju Rao regarded the subject as more or less settled in the sense that damage to the environment was *not* relevant or compensable. This was expressed in the passage below:

> The definition of damage eligible for compensation […] is not a well-settled matter. Damage to persons and property is generally compensable. Damage to the environment or natural resources within the jurisdiction or in areas under the control of a State is now well accepted. However, compensation in such a case is limited to costs actually incurred on account of prevention or response measures as well as measures of restoration. […] *Damage to the*

[10] Refer to Chapter 4, sections 2 and 3.

environment per se, not resulting in any direct loss to proprietary or possessory interests of individuals or the State, is not considered a fit case for compensation.[11] (emphasis added)

Three years later, a year after the publication of the final UNCC awards,[12] Special Rapporteur Rao returned to the concept of relevant transboundary damage and its reparation. This time, however, there appeared to be a significant shift in the ILC's views on the matter. In the Rapporteur's last report, damage to the environment was treated as relevant and compensable. The report confirmed that '[a]s a minimum, damage to the environment relates to […] response and restoration, *including clean-up costs and compensation for damage arising from impairment of the environment'* (emphasis added).[13]

An analysis of the third report suggests that the final UNCC environmental awards might have played a part in this shift. The report has frequent references to UNCC decisions[14] and remarked that the recent UNCC decisions adopted 'a broad interpretation of the term "environmental

[11] ILC, 'First Report on the Legal Regime for Allocation of Loss in Case of Transboundary Harm Arising Out of Hazardous Activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' UN Doc A/CN.4/531 (2003), Para 153 (j) and (k).
[12] The commentaries and recommendations of the "F4" Panel concerning environmental damage became public between June 2001 and June 2005, with the first report on the reparation of environmental damage published on 22 June 2001, with the last report published on 30 June 2005. Refer to UNCC Governing Council, 'Report and Recommendations Made by The Panel of Commissioners Concerning the First Instalment Of "F4" Claims' (22 June 2001) S/AC.26/2001/16 and UNCC Governing Council Panel of Commissioners, 'Report And Recommendations Made By The Panel Of Commissioners Concerning the Fifth Instalment of "F4" Claims' (30 June 2005) UN Doc S/AC.26/2005/10.
[13] ILC, 'Third Report on the Legal Regime for the Allocation of Loss in Case of Transboundary Harm Arising Out of Hazardous Activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' UN Doc A/CN.4/566 (2006), Para 13
[14] Ibid, Para 13-14 and fn 43.

damage" [and] are a pointer of developments to come'.[15] To the Rapporteur, the UNCC decisions added to the 'contemporary concern for the environment'.[16] He concluded that, as of the publication of his Third Report, pure environmental damage was seen not only as relevant but also compensable, irrespective of its economic repercussions or the possibility of restoring the original area. Regarding its compensation, the Rapporteur found that:

> In respect of restoration, the point is well accepted that it should aim at recreating the conditions existing prior to the occurrence of damage. Where that is not possible, costs incurred to introduce, where appropriate, elements of equivalent value are admissible.[17]

The Rapporteur's third and last report referred to UNCC claims, concluding that reparation of pure environmental damage should be regarded as an obligation in international law even when the environment could not be reinstated. In these cases, the report added that reparation should be provided 'by way of replacing ecological services that were irreversibly lost'.[18]

This study led to the adoption of the Draft Principles on the Allocation of Loss in the case of Transboundary Harm Arising from Hazardous Activities. The document is explicit regarding damage to the environment and its reparation, expressing a "clear shift" towards the compensability

[15] Third Report (n 13) Para 14.
[16] Ibid, Para 13-14.
[17] Ibid, fn 43.
[18] Ibid, fn 43.

of pure environmental damage,[19] with the gradual fading of the reluctance to accept liability for this sort of damage.[20] Among its main purposes, the document professes its aim to protect the environment, especially through the 'mitigation of damage to the environment and its restoration or reinstatement'.[21] Its Principle 2 sets out the concept of transboundary damage which includes pure environmental harm. The principle states that '"damage" means significant damage caused to persons, property, or the environment'.[22] In addition, the term includes

> …
>
> (iii) loss or damage by impairment of the environment;
>
> (iv) the costs of reasonable measures of reinstatement of the property, or environment, including natural resources;
>
> (v) the costs of reasonable response measures[23]

Finally, Principle 2(b) provides a definition of "environment" for its purposes, stating that:

> '"environment" includes natural resources, both abiotic and biotic, such as air, water, soil, fauna and flora and the interaction between the same factors, and the characteristic aspects of the landscape'.[24]

Commentaries to the Draft Principles clarify that the definition of environmental damage is not limited to the notion of financial loss or

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[19] Draft Principles on the Allocation of Loss (n 2) Principle 2, Commentary 15.
[20] Ibid, Principle 3, Commentary 8.
[21] Ibid, Principle 3.
[22] Ibid, Principle 2(a)
[23] Ibid, ibid. Note the similarity with UNCC Governing Council 'Decision 7: Additional Categories of Claims' (17 March 1992) UN Doc S/AC 26/1991/7/Rev 1 (GC Decision 7), Para 35; and Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal (adopted 10 December 1999, not into force) UN Doc UNEP/CHW.1/WG/1/9/2, Article 2(2)(c).
[24] Draft Principles on the Allocation of Loss (n 2) Principle 2(b).

reduction in property value.[25] The concept extends to all aspects of the environment, including harm to living and non-living elements, regardless of their financial value. In the commentaries, the ILC confirmed the strong influence of the UNCC in the evolution of the concept, stating that:[26]

> The recent decisions of the United Nations Compensation Commission (UNCC) in opting for a broad interpretation of the term "environmental damage" is a pointer of developments to come [with] the F4 Panel of the UNCC [allowing] claims for compensation [of] (so-called "pure" environmental damage).[27]

Other Commentaries expressed that the then-recent UNCC awards were possible evidence of a trend of compensability of non-use values,[28] favouring a concept that 'could embrace environmental values'.[29] Giving a broad interpretation to the term "impairment of the environment", the 2006 Principles extended the concept of damage to the 'diminution of quality, value or excellence' of the environment.[30] Effectively, the broad definition of damage provided in its Principle 2 expresses nature's relevance for its own sake and its intrinsic values. A commentary on Principle 3 confirms this aspect, suggesting the recognition of the environment 'as a value by itself'[31] and emphasising 'compensation for

[25] See also ibid, Principle 3, Commentary 6.
[26] Ibid, Principle 2, fn 355.
[27] Ibid, Principle 3, Commentary 18.
[28] Ibid, Principle 2, Commentary 18.
[29] Ibid, Principle 2, Commentary 20.
[30] Ibid, Principle 2, Commentary 13.
[31] Ibid, Principle 3, Commentary 6.

losses of [its] "non-use value"'.[32] An analysis of the Special Rapporteur's reports also supports this conclusion. For example, the Second report declares that compensation should extend to the 'loss of intrinsic value'.[33]

The 2006 Draft Principles may have added to the evolution of the subject discussed in the previous chapters, becoming potentially influential for later developments. In 2010, the UNEP Guidelines for the Development of Domestic Legislation on Liability, Response Action and Compensation for Damage Caused by Activities Dangerous to the Environment incorporated many of the 2006 Principle's aspects discussed above.[34] Its Guideline 3 encompassed a broad range of aspects of environmental damage, expecting states to adhere to them by facing any significant and measurable adverse effect on the environment as relevant damage. Among its features, it cited the 'long-term or permanent change' not likely to be redressed through natural recovery within a reasonable timeframe; qualitative or quantitative changes to the state of the environment; *interim* or permanent losses of the ability of the environment to produce ecological goods and services; as well as aesthetic, scientific and recreational values.[35]

The real-life effects of transboundary damage do not vary according to its source, that is, whether it resulted from a lawful or unlawful activity. Therefore, even though the 2006 Principles were oriented towards the

[32] Ibid, Principle 3, Commentary 18. Refer to Chapter 3, Section 4.
[33] ILC, 'Second Report On the Legal Regime for the Allocation of Loss in Case of Transboundary Harm Arising Out of Hazardous Activities', by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur [2004] UN Doc A/CN.4/540, Para 31.
[34] UNEP, 'Guidelines for the Development of Domestic Legislation on Liability, Response Action and Compensation for Damage Caused by Activities Dangerous to the Environment' (Decision SS.XI/5) (26 February 2010).
[35] Ibid, Guideline 3.

development of rules of liability, its definition of damage should be useful for the development of a concept of compensable damage in the context of the law of responsibility of states.[36]

As a note of caution, and as discussed in Chapter 4, the output of the ILC´s work may reflect both the codification and the progressive development of international law.[37] In the case of the 2006 Principles, they represent mostly an attempt at progressive development, rather than the codification of existing customary rules.[38]

2. Developments of the Reparation of Damage to the Natural Environment in the Convention of Biological Diversity

The relevance of damage to the environment and its reparation did not escape the attention of the parties of the Convention on Biological Diversity (CBD).[39] The CBD is among the international agreements which resulted from the Rio 1992 Summit. The agreement has a remarkably biocentrist ethical approach to conservation. From its preamble, the CBD acknowledges the intrinsic value, the *good of its own,* of the pool of life forms.[40] Overall, the treaty reveals a comprehensive approach to

[36] UNEP Working Group of Experts, 'Conclusions by the Working Group of Experts on Liability and Compensation for Environmental Damage Arising from Military Activities' in Alexandre Timoshenko (ed), *Liability and Compensation for Environmental Damage: Compilation of Documents* (UNEP 1998), and "F4" Panel reports, as discussed in Chapter 6.
[37] Refer to Chapter 4, section 2.1; also, Alan Boyle, 'State Responsibility and International Liability for Injurious Consequences of Acts Not Prohibited by International Law: A Necessary Distinction?' (1990) 39 *ICLQ* 1, 1.
[38] Ibid, 8; also, Draft Principles on the Allocation of Loss (n 2) General Commentary 5.
[39] Convention on Biological Diversity (adopted 5 June 1992, into force 29 December 1993) (1992) 31 ILM 822 (CBD).
[40] Ibid, Preamble.

conservation, aiming to preserve biological diversity (the pool of inter- and intra-species diversity).[41]

The parties to the CBD agreed on regular meetings of its Conferences of Parties (CoPs) to review their commitments and implementation.[42] At its meetings, the parties regularly assess the Convention's goals and achievements. This continuous process of decision-making adjusts the agreement to the most recent scientific evidence and may result in the adoption of new annexes and decisions, even additional treaties, or protocols.[43] This dynamic results in parties to the Convention constantly reviewing their commitments regarding the conservation of biological diversity, which notion is generally detached from utilitarian notions of usefulness to man. As the ICJ revealed in the *Case Concerning the Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua),* the subsequent behaviour and agreements of parties to a treaty may result in their continuous evolution.[44] The CBD's meetings of parties become an important forum for discussion, revealing the most up-to-date positions of the international community on the subject of conservation of the environment itself, particularly given the fact that the convention is now an almost universally adopted treaty.[45]

[41] Anna Lawrence, 'Introduction: Learning from Experiences of Participatory Biodiversity Assessment', in Anna Lawrence (ed), *Taking Stock of Nature: Participatory Biodiversity Assessment for Policy, Planning and Practice* (CUP 2010), 4.
[42] CBD (n 39) Article 23.
[43] Ibid, Article 23, Para 4.
[44] *Case Concerning the Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua)* (Judgment) [2009] ICJ Rep 213, Para 64.
[45] CBD, *List of Parties* available on <https://www.cbd.int/information/parties.shtml> accessed 8 February 2023.

Although the primary focus of the CBD is on the conservation of biological diversity through sustainable use, the agreement provided for the regulation of restoration of damage to biological diversity. Its Article 8 provides the obligation of states to 'rehabilitate and restore degraded ecosystems and promote the recovery of threatened species'.[46] Article 9 provides for the recovery and rehabilitation of threatened species.[47]

The topic of restoration appears to have picked up within the CBD, especially at its 10th Meeting of the Parties (MoP), held in 2010, when the parties agreed on the *Aichi Targets* for diversity. As a result, the parties committed to the restoration of at least 15 per cent of the earth's degraded ecosystems within the next decade.[48] Twelve years on, at the 15th meeting of the CoP (CoP 15), the parties agreed on an even more ambitious commitment to achieve the 'effective restoration' of at least 30 per cent of degraded areas of the planet by 2030.[49] This expresses not only the commitment of the international community to the conservation of Earth's ecosystems, but also to their agreement that states must engage in the restoration of damaged ecosystems. To scholars, this reveals that the reinstatement of damaged environments has become a key aspect of conservation policies.[50]

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[46] CBD (n 39) Article 8(f).
[47] Ibid, Article 9(c).
[48] CBD CoP, 'The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets', Decision X/2 (29 October 2010) UN Doc UNEP/CBD/COP/DEC/X/2 .
[49] CBD CoP, 'Kunming-Montreal Global biodiversity framework', Decision 15/4 (19 December 2022) UN Doc CBD/COP/DEC/15/4.
[50] D Jorgensen, 'Ecological restoration in the Convention on Biological Diversity targets' (2013) 22 *Biodiversity Conservation* 2977, 2977; also, R J Hobbs and J A Harris, 'Restoration Ecology: Repairing the Earth's Ecosystems in the New Millennium' (2001) 9 *Restoration Ecology* 239, 246.

The commitment of CBD parties to reaching an agreement on the restoration of damaged ecosystems led to frequent on the subject. From its adoption, the parties had in mind a future general agreement on the reparation of damage to biological diversity. Its Article 14(2) provides that the parties would promote future studies towards the adoption of a liability treaty, which should '[include the] restoration and compensation, for damage to biological diversity'.[51] Given that biological diversity concerns the living element of the environment, regardless of its use to man, such an agreement would encompass virtually all forms of pure environmental damage including in transboundary contexts.

The subject of liability for environmental damage to biological diversity is recurrently in the CBD's agenda. In 1998, during the fourth meeting of the CoP, the parties agreed a plan of measures to implement the treaty, which should include agreements on liability and redress for damage to biological diversity.[52] During the following CoP meeting, held in 2000, the parties established a group of experts to advise on the topic of liability for transboundary damage to all biodiversity aspects.[53] The following year, the experts advised the negotiation of an agreement which ensured the broadest possible extent of compensation of environmental damage.[54] Similarly, in 2005, its experts assessed the recent evolution of international agreements providing for the reparation of transboundary

[51] Ibid, Article 14(2).
[52] CBD CoP, 'Measures for implementing the Convention on Biological Diversity' (15 May 1998) Un Doc UNEP/CBD/COP/DEC/IV/10, Para 8-10.
[53] CBD CoP, 'Impact assessment, liability and redress' (26 May 2000) UN Doc UNEP/CBD/COP/DEC/V/18, Para 6-7.
[54] CBD CoP, 'Report Of The Workshop On Liability And Redress In The Context Of The Convention On Biological Diversity' UN Doc UNEP/CBD/WS-L&R/3 (29 June 2001), Para 28.

damage and their provisions on the reparation of 'components of biological diversity such as ecosystems, habitats and species'.[55] As a result, they concluded that all these elements are now part of the concept of "environmental damage".[56] However, the experts regretted the fragmentary nature of these agreements and the fact that most were not yet in force. To them, these aspects resulted in significant gaps in the regulation of transboundary damage to biological diversity, this being an additional reason to seek an overall liability agreement within the CBD to regulate general losses of biological diversity.[57]

In 2006, during the CoP 8, the parties to the CBD agreed that valuation systems should encompass the 'most relevant' forms of value.[58] They discussed different approaches to internalise environmental costs through redress for damage to biodiversity, including creating reserves to provide the ecological services lost from harmed areas.[59] Accordingly, two years later, the Executive Secretary released a note on the subject of liability and redress for damage to biodiversity. The report concluded that primary remediation of the environment should be the main focus of redress for damage to the environment.[60] However, it also emphasised

[55] CBD CoP, 'Liability And Redress In The Context Of Paragraph 2 Of Article 14 Of The Convention On Biological Diversity: An Analysis Of Pertinent Issues' (12-14 October 2005) UN Doc UNEP/CBD/EG-L&R/1/2/Rev.1, Para 38.
[56] Ibid, Para 38.
[57] Ibid, Para 40.
[58] CBD CoP, 'Decision VIII/29: Liability and Redress' UNEP/CBD/COP/DEC/VIII/25 (15 June 2006), Protocols and Guidelines on valuation, Annex A.
[59] Ibid, ibid.
[60] CBD CoP, 'Liability And Redress In The Context Of Paragraph 2 Of Article 14 Of The Convention On Biological Diversity' (20 March 2008) UN Doc UNEP/CBD/COP9/20/Add.1, Para 53-54.

the need to develop additional criteria for 'complementary methods of restoration and/or monetary compensation for irreversible damage'[61]

In 2010, the parties agreed that the multi-year programme of work for the Convention for 2011-2020 should address liability and redress according to Article 14(2).[62] Later CoPs remarked on the importance of promoting ecosystem restoration and developing valuation systems to tackle climate change.[63] A similar agreement on liability within the CBD, as provided in Article 14(2), with similar provisions would significantly contribute to the protection of the natural environment. Such an agreement would bridge the gaps between existing liability agreements. At least, it would provide some level of certainty that damage to the natural environment would be addressed by operators. Scholars agree that there are ongoing negotiations for an agreement on liability for damage from other risks.[64] Similarly, an analysis of CoP decisions reveals recent studies[65] towards extending liability to general risks to biodiversity.[66] Despite the subject not being on the preliminary agenda among the main issues to be addressed

[61] Ibid, Para 56.
[62] CBD CoP, 'Report Of The Tenth Meeting Of The Conference Of The Parties To The Convention On Biological Diversity', UN Doc UNEP/CBD/COP/10/27 (20 January 2011), 145.
[63] CBD CoP, 'Decision XI/16: Ecosystem Restoration' UN Doc UNEP/CBD/COP/DEC/XI/16 (5 December 2012), Para 2(h); and CBD CoP, 'Decision XII/19: Biodiversity and climate change and disaster risk reduction' UN Doc UNEP/CBD/COP/DEC/XII/14 17 October 2014, Para 1(b).
[64] Elisa Morgera and Elsa Tsioumani, 'Yesterday, Today and Tomorrow: Looking Afresh at the Convention on Biological Diversity' (2011) 21 *YIEL* 3, 28.
[65] CBD CoP, 'Decision XIV/21: Liability and Redress' UN Doc CBD/COP/DEC/14/21 (30 November 2018), Para 2-3.
[66] CBD CoP, 'Decision XII/14: Liability and Redress in the Context of Paragraph 2 of Article 14 of the Convention' UN Doc UNEP/CBD/COP/DEC/XII/14 (17 October 2014), Preamble, Para 3.

by the CoP in the 2022-2030 period,[67] their discussions suggest that such an agreement may be adopted in the following years.

This thesis has previously examined how treaties may influence the shaping of customary international law.[68] The negotiations leading to the adoption of an agreement, as well as subsequent meetings of parties, provide opportunities for states to express their views on relevant subjects. At times, these discussions may influence the perception of how states should behave.[69] The ratification of a treaty by a substantial number of states may serve as evidence of a broad consensus on particular subjects, particularly when its adoption is nearly universal as in the case of the CBD.[70] This is more accentuated when its provisions align with the actual practice of states.[71] Some commentators have even argued that the ratification of a treaty by a large number of states may create what has been called “instant custom”.[72]

In the case of the CBD, the vast majority of States are now parties to the treaty. Its meetings serve as important forums in which parties negotiate which rules of soft law and international custom should be codified and to what extent. Therefore, the adoption of a liability agreement within the CBD concerning the responsibility of states for transboundary

[67] CBD CoP, ‘Multi-Year Programme Of Work Of The Conference Of The Parties Up To 2030’ UN Doc CBD/COP/15/15 (31 October 2022).
[68] Refer to Chapter 5, Section 4.2.
[69] Jonathan I Charney, 'International Agreements and the Development of Customary International Law' (1986) 61 Wash L Rev 971, 990
[70] Ibid, 973.
[71] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Judgment. [1986] ICJ Rep 14, Para 184
[72] Gary L Scott and Craig L Carr, ‘Multilateral Treaties and the Formation of Customary International Law’ (1996) 25(1) *DJILP* 314, 316

environmental damage would certainly represent an important driver for the development of customary international law, subject to the number of states that adopt and ratify the protocol and to its entry into force.

3. The Nagoya-Kuala Lumpur Supplementary Protocol on the Cartagena Protocol on Biosafety

On 29 January 2000, the parties to the CBD agreed on the Cartagena Protocol On Biosafety to The Convention On Biological Diversity (Cartagena Protocol on Biosafety).[73] The Cartagena Protocol aims to prevent damage to biodiversity resulting from the release of living modified organisms (LMOs) to the environment. At that stage, states could not yet agree on liability provisions.[74] It took them several more years to reach an agreement to regulate the liability for damages to biological diversity as a result of the release of modified organisms. The Nagoya Kuala-Lumpur Supplementary Protocol on Liability and Redress (N-KL Supplementary Protocol)[75] provided that, in these situations, the damage to biological diversity would result in liability for restoring the environment to its previous condition or, when impossible, to 'its nearest equivalent'.[76] The N-KL Supplementary Protocol provides the relevance and compensability of biological diversity. In addition, it provides for its reparation by replacing lost resources 'with other components of

[73] Cartagena Protocol On Biosafety to The Convention On Biological Diversity (adopted 29 January 2000, into force 11 September 2003) (Cartagena Protocol on Biosafety).
[74] Stefan Jungcurt and Nicole Schabus, 'Liability and Redress in the Context of the Cartagena Protocol on Biosafety' (2010) 2 *RECIEL* 197, 197.
[75] Nagoya - Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety (adopted 15 October 2010, into force 5 March 2018) UN Doc UNEP/CBD/BS/COP-MOP/5/17.
[76] Ibid, Article 2(2)(d)(ii)(a).

biological diversity for the same, or for another type of use either at the same or, as appropriate, at an alternative location'.[77]

Overall, the Protocol represents a significant achievement not only by setting out that pure transboundary environmental damage is relevant but also that it deserves restoration. Finally, it is remarkable that it provides for environmental restoration, even if it requires the use of alternative elements or resources to the previously existing ones. The fact that the Protocol regulates the reparation of biological diversity, regardless of its economic impact, is another step towards the recognition of nature's intrinsic value and of the compensability of these values.

4. International Disputes Concerning Transboundary Damage to the Natural Environment and its Reparation

Scholars have described the essential role of international courts in the conservation of the global environment.[78] They consider international claims, settlements, and awards among the critical determinants of the development of international environmental law.[79] Similarly, there is an overall agreement on the significant formative influence of international precedents in international law. The ICJ Statute describes judicial decisions as a subsidiary legal source with some role in the development

[77] Ibid, Article 2(2)(d)(ii)(b). It reflected the earlier proposition for the use of the benefit transfer method (see fn n 59).
[78] Cymie Payne, 'Judicial Development' in Lavanya Rajamani et al (ed), *The Oxford Handbook of International Environmental Law* (OUP 2021), 454.
[79] Patricia Birnie et al, *International Law and The Environment* (3rd edn, OUP 2009), 38; Philippe Sands et al, *Principles Of International Environmental Law* (3edn, CUP 2012), 179.

of international law.[80] Similarly, the ILC considers these decisions as one of the means for the determination of customary rules.[81]

In practice, however, international awards and advisory opinions have significant implications for the development of international law and acquire a law-formative force and are referred to as a judicial path to change in the law.[82] This is true particularly when precedents are repeated within the same court.[83] Precedents have significant normative influence in shaping the future behaviour of states. These awards create and alter expectations over the contents of international law, potentially leading states to mould their behaviour to what they perceive as international law as a result.[84] This leads international precedents to assume a *de facto* normative role, as a consequence of the assumption that future rulings should be consistent with said precedents. In essence, states generally abide by these rulings when they find themselves in similar situations in the future, even when they were not parties to that particular dispute. As a result, international precedents may influence and shape state behaviour almost as much as other sources of international

[80] 1945 Statute of the International Court of Justice (26 June 1945, into force 24/10/1945), Article 38(1).
[81] ILC, 'Draft Conclusions on the Identification of Customary International Law' (2018) UN Doc. A/73/10 (ILC Draft Conclusions), Conclusion 13.
[82] Nico Krisch and Ezgi Yildiz, 'The Many Paths of Change in International Law' in Nico Krisch and Ezgi Yildiz (eds), *The Many Paths of Change in International Law* (OUP 2023), 14
[83] Mohamed Shahabuddeen, *Precedent in the World Court* (CUP 2007), 76-81; also, Christian J Tams, 'The ICJ as a "Law-Formative Agency": Summary and Synthesis' in Christian J Tams and James Sloan (eds), *The Development of International Law by the International Court of Justice* (OUP 2013), 378-379.
[84] Payne, 'Judicial Development' (n 84) 454; and Armin von Bogdandy and Ingo Venzke, 'Beyond Dispute: International Judicial Institutions as Lawmakers' (2011) 1(12*) German LJ* 979, 979.

law,[85] in a phenomenon which has been described as 'international judicial law-making'.[86]

As discussed in chapters 3 and 4, several international disputes have discussed the relevance of transboundary damage, including damage to the natural environment.[87] While in some of those claims, the parties may have debated the consequences of this sort of damage, until recently, its reparability had not been settled by international courts. This changed in the last two decades, after three disputes concerning the subject reached the International Court of Justice (ICJ).

4.1. *Case Concerning Aerial Herbicide Spraying (Ecuador v Colombia)*[88]

In the first of these disputes, the *Aerial Herbicide Spraying case (Ecuador v Colombia)*, Ecuador filed a claim to the ICJ seeking, among other things, the reparation of damage to its natural environment as a result of the aerial spraying of herbicides near its border with Colombia. A world-leading producer of cocaine, Colombia has sustained a decades-long fight against organised crime.[89] Between 2000 and 2006 alone, the country allocated US$7.5billion to tackle drug production in its territory,[90] part of which was spent on the aerial fumigation of extensive areas of its

[85] Ibid, 980-987.
[86] Bogdandy and Venzke (n 84) 980.
[87] Refer to Chapter 3, section 2.2, and Chapter 4, Section 4.
[88] *Aerial Herbicide Spraying Case (Ecuador* v. *Colombia)* (Order of 13 September 2013) (*Aerial Herbicide*) [2013] ICJ Rep 278.
[89] Tobias Franz, 'Plan Colombia: Illegal Drugs, Economic Development and Counterinsurgency - a Political Economy Analysis of Colombia's Failed War' (2016) 34(4) *Development Policy Review* 563, 564-573; also Robert Esposito, 'The ICJ and the Future of Transboundary Harm Disputes: A Preliminary Analysis of the case concerning Aerial Herbicide Spraying (Ecuador v Colombia)' (2010) 2010 *Pace Int'l L Rev Online Companion* [x], 8; John Barry, 'From Drug War to Dirty War: Plan Colombia and the U.S. Role in Human Rights Violations in Colombia' (2002) 12 *Transnat'l L & Contemp Probs* 161, 172-173.
[90] Franz (n 89) 564-573.

territory with pesticides.[91] Reportedly, the operation involved the use of aggressive substances, among which were defoliating agents analogous to the infamous “agent orange” extensively used during the Vietnam War.[92] Some of the pesticides used were believed to be toxic to persons and the environment,[93] and possibly carcinogenic.[94] Despite being described as largely ineffective, at a cost of US$240,000 to remove a single kilogram of cocaine from the market, the Colombian Government carried out these fumigations in its territory over a period of several years.[95] Allegedly, part of the sprayed material was carried to the territory to some of its neighbours, resulting in significant damage.[96]

Among its neighbours, Ecuador was particularly bothered with the potential damage which could result to its territory. This led the concerned states to agree on a 10km spray-free corridor along their border, which failed to resolve Ecuador’s concerns.[97] As a result, on 31 March 2008, the Ecuadorian government filed an application to the ICJ requesting the cessation of the operations and compensation for allegedly large-scale damage to the environment which resulted from the herbicide spraying.

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[91] Tim Rhodes et al, ‘Ecologies of Drug War and More-than-human Health: The Case of a Chemical at War with a Plant’ (2021) 89 *The International Journal of Drug Policy* 1, 3; also Franz (n 90) 573; also Natalia A Cadena, 'Colombian Fumigation of Herbicides and International Humanitarian Law' (2017) 6 *Ius Humani Revista de Derecho* 173, 175-176.
[92] Erin Nagy, ‘Border Dispute Taken to The Hague: Ecuador Challenges Plan Colombia’ (2007) 27(15) *Washington Report on the Hemisphere* 1, 5.
[93] Paola Solano, 'Colombia's Herbicide Spraying in the Crucible between Indigenous Rights, Environmental Law and State Security ' (2014) 9 *Intercultural Hum Rts L Rev* 271, 277; also, Rhodes et al (n 91) 3.
[94] Rhodes *et al* (n 91) 6.
[95] Ibid, 3; also, Graham Matthews, ‘Aerial Spray Drift – Consequences of Spraying Small Droplets of Herbicide’ (2014) 25(4) *Outlooks on Pest Management* 279, 282; Franz (n 90) 582-583.
[96] Peter Benner *et al*, ‘Modelling Glyphosate Aerial Spray Drift at the Ecuador–Colombia Border’ (2016) 40(1) *Applied Mathematical Modelling* 373, 373; also, Matthews (n 97) 279.
[97] Matthews (n 97) 279.

In addition, Ecuador claimed compensation, among others, for the monitoring and assessment costs, as well as for the depletion of natural resources, harm to wildlife, ecosystems, biological processes, nutrient and carbon cycles, pollination, and their interactions.[98] An assessment of the claimant's application reveals that it was tailored around compensation standards very similar to those of successful UNCC claims, including a request for compensatory remediation for temporary losses of ecological services.[99]

Slashing the scholarly hope that a judgment of the merits could shed light on our controversial topic,[100] in 2013, the parties reached a settlement which led to the early termination of the case.[101] The agreement involved the payment of US$15million in compensation,[102] with the Ecuadorian government describing it as "a total victory".[103]

[98] *Aerial Herbicide Spraying Case* (Ecuador Application for Institution of Proceedings) (n 88) Para 6.7-6.56, 6.105, and 10.40-10.46.
[99] *Aerial Herbicide* (n 88) Para 10.19.
[100] Jorge E Vinuales, 'The Contribution of the International Court of Justice to the Development of International Environmental Law: A Contemporary Assessment' (2008) 32 *Fordham Int'l LJ 232*, 255; also, Jessica L Rutledge, 'Wait a Second - Is That Rain or Herbicide - The ICJ's Potential Analysis in Aerial Herbicide Spraying and an Epic Choice between the Environment and Human Rights' (2011) 46 *Wake Forest L Rev* 1079, 1103-1108; Esposito (n 90) 26-27.
[101] *Aerial Herbicide* (n 88) (Order of 13 September 2013), 279.
[102] Benner et al (n 97) 373.
[103] Jasmine Trillos-Decarie, 'Ecuador Logra un Acuerdo Favorable de Colombia, Concluyendo el Caso por Fumigaciones Aéreas ante la Corte Internacional de Justicia' *Business Wire* (19 September 2013) <https://www.businesswire.com/news/home/20130919006382/es/> assessed 16 March 2022.

4.2. The Concept of Relevant Damage and its Reparation in the Case Law: *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)*[104]

Shortly after the Ecuadorian claim, Costa Rica and Nicaragua submitted two reciprocal claims to the ICJ, both of which also discussed damage to the environment and its reparation. Since the 19th Century, the two neighbours have had a contentious relationship regarding their borders. Their dispute led to the agreement of the 1858 Treaty of Limits.[105] In 1896, disagreements over its interpretation led to a demarcation commission, which also failed to put an end to their disagreements.[106] Since then, the states have enjoyed complex international relations.[107]

In the *Certain Activities case*, on 18 November 2010, Costa Rica filed an application before the ICJ[108] alleging the unlawful incursion of Nicaragua's agents into its territory. Costa Rica contended that the actions of Nicaragua's personnel in its territory caused damage to a protected area of Ramsar-listed wetlands. On 8 March 2011, the ICJ issued a provisional order advising the parties to preserve and refrain from further activities in the area until a final judgment.[109] On 22 December 2011, Nicaragua filed a counter-claim, partly connected to the

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[104] *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 (Certain Activities and Construction of a Road, Judgment).
[105] *Certain Activities and Construction of a Road* (Judgment) (n 104) Para 94-99.
[106] Ibid, Para 56-64.
[107] *Case Concerning the Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua), Judgment* [2009] ICJ Rep 2013, Para 15-28.
[108] *Certain Activities and Construction of a Road* (n 104) Application Instituting Proceedings, available on <https://www.icj-cij.org/public/files/case-related/152/16917.pdf> (Application), Para 37-42.
[109] *Certain Activities* (n 104) Order of 8 March 2011 [2011] ICJ Rep 6, Para 55-64 and 86.

dispute, where it argued that the construction of a road within Costa Rica's territory breached environmental obligations. Nicaragua maintained that, given the construction's significant environmental impact, it ought to have been preceded by an environmental impact assessment (EIA) to reveal its transboundary impact. In addition, the construction works would have increased water sediments in the San Juan River and adversely affected aquatic life. As a result, Nicaragua requested the cessation of the construction, with compensation for damage to the aquatic environment.[110] Given their connection, on 17 April 2013, the Court joined both discussed cases.[111]

In its judgment of 16 December 2015, the ICJ held that Nicaragua had breached international law by unlawfully entering and causing damage within Costa Rican territory. The Court recalled the obligation of states to abstain from 'causing significant damage to the environment' of other states.[112] It concluded that Nicaragua was responsible for the damage, which consisted mainly of harm to vegetation and soil in wetland areas.[113]

In the *Construction of a Road case*, the Court reiterated its jurisprudence, according to which activities likely to cause significant transboundary harm must be preceded by an EIA.[114] Despite Costa Rica's failure to

[110] *Construction of a Road* (n 104) Application Instituting Proceedings, available on < https://www.icj-cij.org/public/files/case-related/152/16917.pdf> accessed 5 July 2021 (Construction of a Road, Institution of Proceedings), Para 12.
[111] *Certain Activities* (n 104) Joinder of Proceedings, Order of 17 April 2013 (2013) ICJ Rep 166, Para 18-24; and *Construction of a Road* (n 104) (Joinder of Proceedings (2013) ICJ Rep 184, Para 13.
[112] Ibid, Para 118.
[113] *Certain Activities and Construction of a Road* (Judgment) (n 104) Para 92-93, 129, and 142.
[114] Ibid, 153.

comply with this procedural obligation,[115] the Court found no evidence of damage to the waters of the San Juan and therefore dismissed Nicaragua´s claim for compensation.[116]

Following the parties´ failure to agree on the amount of compensation owed, on 16 January 2017, Costa Rica submitted an application to the ICJ requiring the Court to adjudge the sum .[117] The claimant argued that Nicaragua owed over US$7million in damages, including interest. Nicaragua, on the other hand, argued that the total sum to be paid in compensation should not exceed US$188,504.[118]

a) The Concept of Relevant Damage to the Territory of Other States where it Concerns the Environment

One year later, on 2 February 2018, the ICJ delivered its final decision, which clarified several key aspects of the debate concerning the responsibility for, and the compensability of environmental damage. Regarding the concept of damage in international law, the Court found that damage to wetlands, despite their limited economic value, constitutes relevant damage. It also found that the 'principle of full reparation' extends to damage to the environment 'in and of itself', adding that damage to the environment´s capacity to provide ecological goods and services is also compensable under international law.[119] According to the ICJ,

[115] Ibid, 153-162.
[116] Ibid, Para 224-226.
[117] *Certain Activities* (Compensation, Judgment) (n 1) Para 11 and 41.
[118] Ibid, Para 17.
[119] Ibid, Para 41.

damage to the environment, and the consequent impairment or loss of the ability of the environment to provide goods and services, is compensable under international law. Such compensation may include indemnification for the impairment or loss of environmental goods and services in the period prior to recovery and payment for the restoration of the damaged environment.[120]

b) The Value of an Environment: Reparation for Pure Environmental Damage to the Environment of Other States

The main point of contention concerned the appropriate methodology for determining compensation for the damage. Nicaragua's arguments were based on UNCC precedents, leading the defendant to offer the cost of restoration of the environment to its previous condition. In Nicaragua[s view, losses of "environmental goods and services" should be compensated through the creation of natural areas in alternative locations.[121] Costa Rica, however, relied on the economic assessment of losses of environmental services, using a model referred to as the 'value transfer approach', to quantify the monetary value of the environment,[122] which resulted in an estimated US$3million in losses of ecological services alone.[123]

In its reasoning, the ICJ noted the absence in international law of 'any specific method of valuation for the purposes of compensation for

[120] Ibid, Para 42.
[121] Ibid, Para 40.
[122] Ibid, Para 47.
[123] *Certain Activities* (Compensation, Judgment) (n 1) Memorial of Costa Rica on Compensation, available on < https://www.icj-cij.org/public/files/case-related/150/150-20170403-WRI-01-00-EN.pdf> accessed 7 February 2022, Para 3.19.

environmental damage'.[124] Nonetheless, it concluded that compensation should 'approximately reflect the value of the impairment or loss of environmental goods and services'.[125] This led the Court to award just over US$2,708 in compensation for restoration costs. Regarding the loss of ecological goods and services, the Court rejected the approaches proposed by the parties. Instead, it elected an 'overall valuation' which led to an award of US$120,000.[126] Finally, the Court awarded just over US$57,000 in compensation for other expenses related to the case, including expenses for claim preparation,[127] and just over US$185,000 for the cost of preventive and mitigation measures.[128]

The 'overall valuation' method adopted by the Court attracted dissent among some of its judges. Judge *ad hoc* Dugard classified the Court's assessment as "obscure".[129] The Separate Opinions of Judge Bhandari and Judge Donoghue observed that the Court's valuation failed to account for environmental values lost as a result of the wrongful acts and considered that it would have been preferable to award a *lump sum* based on equitable considerations.[130] Finally, Judge Cançado Trindade remarked on the need to provide rehabilitation[131] and address the losses

[124] *Certain Activities* (Compensation, Judgment) (n 1) Para 52.
[125] Ibid, 86.
[126] Ibid, Para 86-87.
[127] Ibid, Para 110, 116, 122, 124, and 131.
[128] Ibid, Para 146.
[129] Ibid, Dissenting Opinion of Judge ad hoc Dugard, Para 16.
[130] Ibid, Separate Opinion of Judge Bhandari, Para 10-11 and Separate Opinion of Judge Donoghue, Para 22.
[131] Ibid, Separate Opinion of Judge Cançado Trindade, Para 33-52.

of ‘intrinsic value of the environment for the populations’, which could not be made good by financial compensation.[132]

c) Discussion of Findings

In the *Certain Activities case*, the ICJ recognised the responsibility of states for transboundary environmental damage, clarifying that the “damage” eligible for compensation includes both pure environmental damage and temporary losses of environmental values (referred to as “environmental goods and services”). To summarise these findings, the court held that states are liable to provide compensation for: (1) expenses from claim preparation;[133] (2) preventive and mitigation measures, aimed at avoiding the aggravation of the damage;[134] (3) the costs of restoration or reinstatement, regarding the damage to the environment itself;[135] and (4) compensation for losses of environmental goods and services.[136]

An assessment of the debates reveals that the controversy concerned primarily the appropriate methodology for assessing losses of environmental values (referred to as “ecosystem services”). Costa Rica sought compensation for economic losses related to “ecosystem services” based on economic models. As discussed in Chapter 5, due to their complexity and the uncertainty of their outcomes, these methodologies have been largely rejected in international law since the

[132] Ibid, Para 70.
[133] Ibid, Para 110-131.
[134] Ibid, Para 146.
[135] Ibid, Para 87.
[136] Ibid, Para 86.

1970s.[137] Aside from the uncertainty of their results, economic assessments of ecosystem services confine valuation to losses of instrumental values. Therefore, they fail to account for losses of intrinsic values,[138] that is, the value a being possesses *in and of itself.*[139] Accordingly, despite being used in some domestic legal systems,[140] international law has traditionally resisted the acceptance of financial assessments of environmental damage based on hypothetical models.[141]

In a separate opinion, Judge Bhandari regretted that Costa Rica's request was based on economic assessments, stressing the obstacles to them.[142] To him, this contributed to the award of compensation by a lump sum.[143] Scholars have also emphasised the inaccuracy of economic models, which fail to account for losses such as biodiversity, carbon sequestration, and intrinsic value.[144] Likewise, the UN Food and Agriculture Organization has acknowledged the 'irreplaceable value' of native tree species, which means it cannot be expressed in economic terms.[145]

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[137] Refer to Chapter 4, section 2.1.
[138] Georg Henrik von Wright, *The Varieties of Goodness* (Routledge 1963), 179-182.
[139] John O'Neill, 'The Varieties of Intrinsic Value' in Andrew Light and Holmes Rolston, III (eds) *Environmental Ethics* (Blackwell 2012), 131-132.
[140] Michael Bowman 'Biodiversity, Intrinsic Value, and the Definition and Valuation of Environmental Harm' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law. Problems of Definition and Valuation* (OUP 2002), 42-73
[141] Pemmaraju S Rao, 'International Liability for Transboundary Harm' (2004) 34 *EPL* 224, 229.
[142] *Certain Activities*, Compensation, Judgment (n 117) Dissenting Opinion of Judge Bhandari, Para 6.
[143] Ibid, Para 10.
[144] Ibid, Para 11. Refer to Alexander Gillespie, International Environmental Law, Policy and Ethics (2nd edn, OUP 2014), 28; also, Maffei (n 130) 382.
[145] FAO and UNEP, *The State of the World's Forests 2020*. *Forests, Biodiversity and People* (FAO 2020), 15.

Despite their controversial character and their unsatisfactory results during the UNCC practice,[146] Costa Rica based its request on an economic assessment. Dismissing most of the UNCC´s awards as "outdated",[147] Costa Rica even sought compensation for the cost of soil removal and exchange, a measure which had been repealed in the UNCC practice for causing more harm than good.[148] Most remarkably, it assessed compensation on the basis of a so-called 'ecosystem services approach',[149] which is particularly unsuited for areas of self-evident economic value.[150]

In its judgment, the Court rejected both parties' valuations and observed that the matter remains unresolved in international law. The Court opted, instead, for an "overall approach".[151] The "overall approach" or "global sum approach" has been a feature of compensation awards by the Court since the *Ahmadou Sadio Diallo* case[152] in 2012, when the Court relied

[146] UNCC Governing Council Panel of Commissioners, 'Report And Recommendations Made By The Panel Of Commissioners Concerning the Fifth Instalment of "F4" Claims' (30 June 2005) UN Doc S/AC.26/2005/10 (Fifth Instalment), *Claim 5000301 (Iran),* Para 155-161.
[147] Ibid*,* Para 39 and 48; In contrast, the court acknowledged the importance of UNCC precedents. Refer to *Certain Activities* (Compensation, Judgment) (n 1) fn 101; also *Certain Activities* (Compensation, Judgment) (n 1) Dissenting Opinion of Judge *ad hoc* Dugard, Para 8; also *Ibid,* Dissenting Opinion of Judge *ad hoc* Guillaume, Para 20.
[148] Refer to Chapter 6, section 4.3.3.
[149] *Certain Activities* (Compensation, Judgment) (n 1) Para 45-48
[150] Michael Bowman *et al*, *Lyster's International Wildlife Law* (CUP 2011), 403. About use and non-use values refer to Nick Hanley, 'The Economic Value of Environmental Damage' in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law. Problems of Definition and Valuation* (OUP 2002), 27; also, Julio Barboza, 'The ILC and Environmental Damage' in Peter Wetterstein (ed), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 76; Jeffrey C Dobbins, 'The Pain and Suffering of Environmental Loss: Using Contingent Valuation to Estimate Nonuse damages' 1993 (43) *Duke Law Journal* 879*,* 898-906.
[151] *Certain Activities* (Compensation, Judgment) (n 1) Para 52.
[152] *Ahmadou Sadio Diallo (Republic of Guinea v Democratic Republic of the Congo),* Compensation, Judgment, [2-12] ICJ Rep 324.

on equitable considerations to determine compensation.[153] Some scholars have welcomed this approach due to its flexibility, which allows the Court to balance all factors involved,[154] particularly in cases involving evidentiary difficulties or imprecise harm.[155] The methodology has been praised for enabling a separation between compensation and market value,[156] something essential where one aims to compensate for losses of intrinsic values. However, as discussed above, the method has attracted criticisms from judges who have disagreed with its methodology, its lack of clarity, and the amount awarded.[157]

The ICJ findings in the *Certain Activities case* are consistent with the trends revealed in previous chapters. The award leaves little room to dispute the responsibility of states for environmental damage as well as their liability for restoration costs and losses of "environmental goods and services".

The problem of assessing this damage was addressed through the use of a "global sum approach", which was part of the Court's jurisprudence, having previously used in the *Diallo* case. Still, the award of a lump sum was a contentious issue within the Court. To Judge *ad hoc* Dugard, the

[153] Ibid, Para 24, 33, and 36.
[154] Yang Liu, 'Compensation in the Jurisprudence of the International Court of Justice: Towards an Equitable Approach' (2024) 15 *JIDS* 73, 76-79.
[155] Daniel Brinkman, 'Redefining Compensation under International Law: the Methodology of the International Court of Justice in DRC v Uganda' (2024) 87(3) MLR 728,733-737.
[156] Toni Marzal, 'Conjuring Markets: Valuation in Comparative International Economic Law' (2024) 27 *JIEL* 353, 360.
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[157] Refer to Section "b" supra.

Court used a "grossly inadequate valuation for environmental damage" which led to the award of a 'mere token' of the actual harm.[158] While defending the use of lump sums, he argued for the use of other considerations, such as the need to tackle climate change, and the gravity of Nicaragua's actions.[159]

Judge Cançado Trindade, by contrast, suggested the use of a mix of remedies, with restitution as the primary one, as a means to ensure the restoration of the environment to its previous condition, as opposed to focusing on precisely assessing environmental damage in pecuniary terms. He emphasised the need to prioritise *restitutio in integrum* to ensure the restoration of the affected environment, stating that 'any compensation awarded for environmental damage is to be used for restoration'.[160] He also favoured equitable considerations to compensate for irreplaceable environmental losses, that cannot be precisely quantified.[161] Judge Bhandari also supported the use of equitable considerations in the calculation of a lump sum and lamented that the Court failed to sufficiently explain the amount awarded in its reasoning.[162] Finally, arguing for the extraordinary gravity of Nicaragua's acts, he supported an award of punitive damages. To him, this would function as a deterrent against similar acts against the environment in the future.[163]

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[158] *Certain Activities* (Compensation, Judgment) (n 1) Dissenting Opinion of Judge Dugard, Para 7-18.
[159] Ibid, Para 29.
[160] Ibid, Separate Opinion of Judge Cancado Trindade, Para 54 and 68-69.
[161] Ibid, Para 33-50 and 67-68.
[162] Ibid, Separate Opinion of Judge Bhandari, Para 10-12.
[163] Ibid, Para 16-19.

To some scholars, the use of equitable considerations represents a positive development to deal with cases where the financial loss is difficult to quantify, or where there are evidentiary issues.[164] Others, including several judges, focus on the lack of clarity and adequate reasoning, which are required by the ICJ Statute,[165] as well as the difficulty in distributing compensation to victims.[166]

4.3. Compensation in the *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*

In the *Armed Activities* case, the Democratic Republic of the Congo (DRC) raised, among others, the damage to its environment and its compensation as a result of the activity of Ugandan personnel on its territory.[167] In its application, the DRC requested the ICJ to adjudge and declare that Uganda acted wrongfully by occupying part of its territory and carrying out several violations of rules of international law. In addition, the DRC requested the withdrawal of Uganda's forces from its territory, with reparation for the damage which resulted from the occupation, among which, to natural resources.[168]

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[164] Refer to footnotes supra 154, 155, and 156.
[165] Ori Pomson, 'The ICJ's Armed Activities Reparations Judgment: A Brave New World?' (Lieber Institute, 16 February 2022) <https://lieber.westpoint.edu/icj-armed-activities-reparations-judgment/> accessed 13 February 2025.
[166] Diane Desierto, 'The International Court of Justice's 2022 Reparations Judgment in DRC v. Uganda: 'Global Sums' as the New Device for Human Rights-Based Inter-State Disputes' (EJIL: Talk! 14 February 2022) < https://www.ejiltalk.org/the-international-court-of-justices-2022-reparations-judgment-in-drc-v-uganda-a-new-methodology-for-human-rights-in-inter-state-disputes/> accessed 13 February 2025; also, Sebastian Lukic 'Awarding Damages Flexibly… or Painting with a Broad Brush' (Volkerrechtsblog 11 April 2022) < https://voelkerrechtsblog.org/awarding-damages-flexibly/> accessed 13 February 2025.
[167] *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v Uganda)* (Judgment) [2005] ICJ Rep 168 (Armed Activities, Judgment), Para 1.
[168] Ibid, 23-25.

Uganda responded submitting three counter-claims of reparation for attacks on its diplomatic premises, personnel, and nationals.[169] The case involved what has been considered 'one of the most complex and deadliest armed conflicts on the African continent'[170] and 'the most serious and protracted of any since the Second World War'.[171] As most of the claim's aspects are outside the scope of this thesis, this section will be restricted to the debates and decisions directly related to the environmental aspects of the case.

In its judgment of 19 December 2005, the ICJ found Uganda responsible for breaching several rules of international law. As a result, the Court found Uganda to be responsible for damage to natural resources as a result of their unlawful exploitation in the territory of its neighbour. The Court also found that Uganda had an obligation to provide compensation in the form and amount to be negotiated between the parties.[172]

After the parties failed to agree on the sum to be paid in compensation, on 13 May 2015, the DRC filed an application requesting the Court to adjudge the amount.[173] In the judgment of 9 February 2022, the ICJ found that, under Article 31 of the ARSIWA, Uganda had an obligation to make full reparation for all the damage to which it had contributed, including for the loss of natural resources and the environmental damage related to its

[169] Ibid, Para 266-267.
[170] *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)* (Reparations, Judgment) [2022] ICJ Rep 14 (*Armed Activities, Compensation*), Para 64.
[171] Phoebe N Okawa, 'Case Concerning Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v Uganda)' (2006) 55(3) *The International and Comparative Law Quarterly* 742, 743.
[172] Ibid, Para 345.
[173] *Armed Activities, Compensation* (n 170) Para 11.

activities.[174] The court confirmed its precedent from the *Certain Activities* case, finding compensation to be adequate to redress environmental losses.[175]

In addition to losses of natural resources, among which gold, diamonds, coltan, other minerals, coffee, and timber, the DRC claimed compensation for losses of native fauna and flora.[176] The ICJ noted the scarce evidence to precise the extent and value of the damage. As a result, it referred to its precedent in the *Certain Activities* to state that, in light of the exceptional circumstances and gravity of the case,[177] evidentiary issues should not prevent an award of compensation.[178] The Court-appointed expert estimated these losses to be in excess of US$58million.[179] After finding Uganda responsible for the 'direct and indirect loss of wildlife' in national parks,[180] the ICJ found Uganda liable to make reparation, among which for the destruction of natural resources and damage to the flora and fauna.[181]

The insufficient evidence of the extent of damage to biodiversity prevented the Court from awarding compensation for these losses.[182] In contrast, despite the uncertainty over the extent of the damage to the fauna, the Court used equitable considerations as a means of alleviating

[174] Ibid, 69-79.
[175] Ibid, Para 101.
[176] Ibid, Para 260-267.
[177] Ibid, Para 259.
[178] Ibid, Para 106 and 258.
[179] Ibid, Para 267.
[180] Ibid, 351 and 363.
[181] Ibid, Para 275-276 and 363.
[182] Ibid, Para 350.

the burden of proof.[183] Following its precedents from the *Diallo* and *Certain Activities* case,[184] the Court awarded a global sum of US$60million in compensation for losses of natural resources,[185] including all environmental aspects.[186]

4.3.1. Discussion

The award of compensation in the *Armed Activities* case reaffirmed the precedent set in the *Certain Activities* case, confirming that states are responsible for transboundary environmental damage of all kinds. As discussed, evidentiary issues were deemed insufficient to preclude the granting of compensation. Given the uncertain extent and value of the damage, the Court also confirmed its previous practice, with the use of a lump sum award to compensate for these losses.

The use of an overall assessment to award a lump sum remained somewhat contentious among the Court's judges. Judge Yusuf agreed that equitable considerations articulated throughout the judgment justified the award of a global sum. Notwithstanding, he believed that, in the *Armed Activities* case, the Court departed from its established jurisprudence, to award compensation *ex aequo et bono,* that is, detached from certain applicable rules, and 'as a matter of abstract justice'.[187] In essence, he argued that the Court had exceeded the permissible limits of its reliance on equitable principles.[188] Similarly, Judges Robinson and

[183] Liu (n 155) 84.
[184] *Armed Activities, Compensation* (n 170) Para 106, 164, 258, and 363.
[185] Ibid, 405.
[186] Ibid, 258-259 and 366.
[187] Ibid, Separate opinion of Judge Yusuf, Para 23-30. *Contra,* see Ibid, Separate opinion of Judge Yasawa, Para 5-14.
[188] Ibid, 28-32.

Tomka criticised the lack of objective justification for the award.[189] Judges Robinson and Salam remarked that the use of lump sums could complicate the subsequent distribution of proceeds to the affected individuals.[190] Finally, Judge *ad hoc* Daudet dissented regarding the amount awarded, which he considered insufficient to indemnify all particular personal losses.[191]

As discussed above,[192] scholars also disagree on the use of lump sum awards by the ICJ. For some, this approach is well suited to cases affected by evidentiary issues and where the financial value of the loss is imprecise,[193] making it particularly appropriate for compensating environmental damage. Others, however, emphasise the lack of clarity in the calculation,[194] and the consequent difficulty in distributing compensation to victims.[195] For better or worse, however, given the repeated use of lump sums in the ICJ to award compensation, these

[189] Ibid, Separate Opinion of Judge Robinson, Para 15-28; also, ibid, Separate Opinion of Judge Tomka, Para 9.
[190] Ibid, Separate Opinion of Judge Robinson, Para 15; also, Ibid, Separate Opinion of Judge Salam, Para 20-22.
[191] Ibid, Separate opinion of Judge ad hoc Daudet 27-32.
[192] Refer to Section 4.1(c)
[193] Refer to footnotes supra 154, 155, and 156. Also, Jeamin Lee, 'Armed Activities on the Territory of the Congo' (2023) 2 *AJIL* 113, 117.
[194] Alessandro Bufalini, 'Remarks on the role of equity in determining war reparations before the International Court of Justice' (2022) 95 *QIL* 25, 32; also, Ori Pomson, 'The ICJ's Armed Activities Reparations Judgment: A Brave New World?' (Lieber Institute, 16 February 2022) <https://lieber.westpoint.edu/icj-armed-activities-reparations-judgment/> accessed 13 February 2025; Manoel J Ventura, 'Armed Activities on the Territory of the Congo (2023) 62 ILM 399, 401.
[195] Diane Desierto, 'The International Court of Justice's 2022 Reparations Judgment in DRC v. Uganda: 'Global Sums' as the New Device for Human Rights-Based Inter-State Disputes' (EJIL: Talk! 14 February 2022) < https://www.ejiltalk.org/the-international-court-of-justices-2022-reparations-judgment-in-drc-v-uganda-a-new-methodology-for-human-rights-in-inter-state-disputes/> accessed 13 February 2025; also, Sebastian Lukic, 'Awarding Damages Flexibly… or Painting with a Broad Brush' (Volkerrechtsblog 11 April 2022) < https://voelkerrechtsblog.org/awarding-damages-flexibly/> accessed 13 February 2025.

precedents are likely to inform future claims.[196] Considering the Court's authoritative character, the award may serve as a benchmark for similar cases in other courts and tribunals.[197]

Conclusion

This chapter has examined the developments in international law regarding environmental reparation in the past two decades. Beginning with the Draft Principles on the Allocation of Loss and its comprehensive concept of damage, the discussion progressed to assess the developments within the CBD, which culminated in the adoption of a liability protocol for damage to biodiversity from the release of GMOs in the environment. In the case law, the chapter assessed two cases where the ICJ found the compensability of transboundary environmental damage, including losses of natural resources, restoration costs, and losses of environmental services. In assessing such damage, and despite some dissent among its members, the Court adopted the use of compensation by awarding global sums.

Given these discussions, there should remain little doubt regarding the responsibility of states for damage to the environment of other states, and their corresponding obligation to provide reparation, including material restoration and, at a minimum, compensation for instrumental environmental values. In addition, given the persistent uncertainty surrounding the valuation of this damage, the use of overall assessments

[196] Liu (n 155) 76.
[197] Ventura (n 194) 401.

to award lump sums is likely to remain the preferred approach in future cases.

The next chapter will provide closure to this thesis by summarising the preceding discussions and offering final reflections on the current state of international law regarding the responsibility of states for transboundary damage to the environment, and the alternatives in international law for its reparation.

Chapter 8 – Discussion: Main Findings and Recommendations

> *'In a world wracked by global warming, with plastic bags and discarded tires polluting the seas; facing, as we do, an epidemic of extinctions and endless man-made threats to public health, [isn]'t it reckless, almost sacrilegious, to question the intrinsic goodness of nature and reverence for natural living?'*
>
> Alan Levinovitz [1]

In this final chapter, this thesis will draw together the findings covered in previous chapters and point to where we are and how this area needs to move forward from here. This research aimed to assess the responsibility of states for damage to the environment of other states, including environmental values. In addition, it aimed to reveal the appropriate forms of redress for this sort of damage.

[1] Alan Levinovitz, *Natural* (Penguin 2021), Introduction.

The present chapter will assess the thesis' main findings and discussions on the responsibility of states for transboundary environmental damage, the concept of transboundary damage, and the available options for reparation. This chapter will conclude by suggesting, from what has been revealed throughout the thesis, a set of basilar principles for the reparation for this damage. Finally, drawing from this analysis, it will assess the reparation options that most effectively contribute to long-term sustainability.

1. Summary of Findings and Discussions

The introductory chapter of this thesis began by addressing the general recognition that humankind is currently witnessing an environmental crisis of global proportions. It also examined the prevailing view that, if not effectively managed, this crisis could threaten the survival of our species. This environmental crisis is commonly regarded as a result of a pattern of human development which led to the progressive degradation of the earth's natural systems, together with climate change on a global scale and the extinction of countless species.

To address this problem, states have agreed on several multilateral international treaties on conservation, establishing a system of international obligations towards the environment, most of which aim to prevent the further deterioration of the global environment. States have elected sustainable development as their main environmental policy, meaning that they may pursue their development goals provided that their actions do not compromise the long-term viability of the environment. In

this context, the primary approach to conservation has been to regulate the pressure of human activities on the environment.

One aspect of sustainable development that has recently come into focus is the need to restore degraded ecosystems. This thesis has examined this final dimention of sustainability and its reparation, with particular attention to the need for meaningful reparation in the transboundary context. This remains a relatively underdeveloped field of international law which deserves attention, especially if humanity intends to achieve its sustainability goals.

Despite the adoption of multiple agreements intended to regulate the consequences of transboundary damage and its reparation, several reasons contributed to their limited applicability. Firstly, each of these agreements applies to damage resulting from specific risks or contexts. In addition, some of these treaties limit compensation to damage caused to persons and property as a result of transboundary damage. Finally, not all states have been interested in joining and ratifying these agreements, with most of them not yet in force. As a result, in most cases of transboundary damage, states must resort the law of responsibility of states, a field of international law that remains largely based on customary law.

To delimitate the meaning of the term “environment”, the thesis began by examining the term “environmental values”. To that end, Chapter 2 explored the literature on environmental ethics and its study of environmental values, which have been progressively recognised in international law. Traditionally, the environment has been valued in

instrumental terms, that is, to the extent that it is useful to humans. More recently, however, international law has increasingly remarked on the intrinsic value of the environment, that is, its value *in and for itself*, regardless of its worth to humans.

Chapter 3 discussed the preventive obligation of states and its applicability to pure environmental damage, meaning that states have a duty to prevent such harm to the environment of other states. The chapter concluded that this obligation has become a firmly established duty of states in international law.[2] Chapter 4 investigated the consequences of the breaches of this duty to reveal the responsibility of states for transboundary damage to the environment and addressed the remedies available to redress this damage in international law. The chapter revealed that states are generally responsible for environmental damage, particularly when it results from their lack of due diligence. As a result of the principle of full reparation, damages to the environment and its values lead to an obligation to provide reparation. In regard to environmental values, however, the chapter revealed that there is little consistency in their treatment. Therefore, before addressing their reparation, the thesis addressed the concept of environmental values and their protection in international law, allowing for later discussions on its reparation.

The second part of the thesis addressed more practical aspects of the subject, including the regulation of transboundary damage and its reparation in international law. Chapter 5 investigated the concept of

[2] Refer to Ch 3, generally.

relevant transboundary damage as provided in international agreements concerned with the regulation of its consequences. The chapter identified a trend over the last four decades of the adoption of increasingly comprehensive definitions of damage as well as towards the provision of compensation for restoration costs. In addition, it showed that recent agreements provide other forms of redress for cases where the original elements are irreparably damaged, which is addressed by compensating for the cost of introducing similar resources into the environment.

Chapter 6 discussed the United Nations Compensation Commission (UNCC) and its findings on the responsibility of Iraq for damage to the environment resulting from the First Gulf War. Following several resolutions adopted by the UN Security Council on the subject, the UNCC determined Iraq's liability to provide compensation for damage to the environment of other states. This encompassed all damage resulting from the war, including temporary losses of environmental values. Throughout its work, the Commission stressed the importance of restoring affected ecosystems to re-establish their previous state in terms of functionality. Losses of environmental values were addressed by compensation for the cost of establishing natural reserves that would provide similar environmental values to those lost.

Finally, Chapter 7 addressed the developments that followed the completion of the UNCC's practice. Shortly after the publication of its last reports, the ILC adopted the Draft Principles on the Allocation of Loss. The document provided the most comprehensive definition of relevant transboundary damage to date, encompassing harm to living and non-

living elements of the environment. Despite the CBD´s failure to reach a general liability agreement addressing damage to biodiversity, the parties adopted the Nagoya-Kuala Lumpur Supplementary Protocol, which regulates damage arising from the release of GMOs in the environment and its subsequent reparation. The Protocol has been praised for its focus on compensation for pure environmental damage.

Chapter 7 also discussed how international litigation intensified during this period, leading to an important precedent in the ICJ. In the *Certain Activities* case, the Court found that states are responsible for transboundary environmental damage. To the Court, states are liable to provide compensation for restoration costs and losses of certain environmental values. The precedent was later reaffirmed in the *Armed Activities* case, which confirmed the responsibility of states for transboundary environmental damage.

2. The Concept of Environmental Damage and its Reparation in International Law

As discussed above, Chapter 3 revealed that states currently have an obligation to prevent harm to the environment of other states. The chapter revealed that the subject appears to be settled both in precedents and the scholarly literature. However, the answer to the subsequent research questions was not so straightforward, starting with the definition of the concept of damage in international law which is eligible for reparation and how to repair it. Despite the consolidation of the preventive obligation, this thesis remarked how the law of responsibility of states for wrongful acts

was unclear about the consequences for its breaches, particularly regarding pure environmental damage and the loss of ecological values.

2.1. The Concept of Environmental Damage and its Reparation in International Agreements

Chapter 5 assessed several treaties addressing transboundary damage and its reparation, adopted over the past five decades. This analysis revealed different definitions of transboundary damage across the multiple treaties. However, it revealed a regularity verified since the adoption of the 1984 Protocol to the 1969 CLC: all liability agreements considered the environment relevant and deserving, at least, of restoration. The chapter discussed how all subsequent treaties provided for compensation in terms of the actual cost of restoring the environment, expressing the importance of the proceeds of compensation benefitting the environment. However, in light of their limited provisions regarding compensation for irreparable damage, more recent agreements evolved to address this gap by providing for compensation for the cost of introducing “equivalent” elements into the environment.

One limitation identified was that, with a single exception, none of those agreements addressed state responsibility, instead assigning liability to operators. Still, the analysis revealed a clear trend of states increasingly recognising the relevance of the environment and the necessity of its reparation, primarily through restoration. The chapter also considered how the recognition of pure environmental damage among its parties as relevant implies, even if implicitly, a recognition of the environment’s

intrinsic value. Arguably, these treaties reflect this recognition in their provision, as they do not make reparation conditional upon the environment first being deemed as 'useful' for human purposes.[3] The chapter recalled, however, that the adoption of similar provisions across multiple treaties does not necessarily indicate the existence of customary law, and may actually reveal its absence.[4]

2.2. The Responsibility of States for Transboundary Damage to the Environment, the Concept of Damage and its Reparation in the UNCC

In the 1990s, the events surrounding the First Gulf War may have served as an important catalyst for the development of this subject. The withdrawal of Iraqi troops from Kuwait left an environmental disaster of unforeseen proportions, which may have been a “wake-up call” for humanity over the gravity of the issue of environmental damage. After Iraq accepted responsibility for the damage resulting from the war, the UN Security Council instituted the United Nations Compensation Commission (UNCC), with the mandate to assess the damage resulting from the war and to determine its compensation.

The UNCC assessed a significant number of claims for reparation for environmental damage resulting from the war, providing a forum for a detailed study and reflection on the subject. Claims were assessed by Commissioners recruited from among the most prominent experts in the field, which led to the reliability of the extensive material covering the appreciation of the law of responsibility of states on environmental

[3] Refer to Chapter 5, Section 4.1.
[4] Refer to Chapter 5, Section 4.2.2.1.

damage, including pure environmental damage and its reparation. Published in the early 2000s, their reports clarified several issues of reparation for environmental damage.[5]

Chapter 6 revealed that Iraq was found responsible for damage to the environment and environmental values[6] and owed compensation for this damage. Harmed states had the right to compensation for the costs arising from monitoring and assessment allowing them to face the evidentiary issues surrounding baseline conditions, the extent of the damage, and measures for reinstatement. The Commission also provided compensation for mitigation, preventive measures, and clean-up measures. An assessment of the UNCC practice revealed the success of claims where states requested compensation for the cost of reinstatement of the damaged environment and which aimed at the re-establishment of the previously existing situation.

Where requested, Iraq was also found to be liable to compensate for temporary or interim losses of ecological services until the complete recovery of harmed areas. In such cases, compensation tended to be calculated by the cost of creating and/or managing ecosystems in alternative areas until the complete recovery of the original ones. This latter aspect of the Commission has effectively incorporated the prevailing reparation standard from liability agreements into its practice, with

[5] Refer to Chapter 6.
[6] More technically, this responsibility was provided in UNSC Res 687 (1991) (3 April 1991) UN Doc S/RES/687, Para 16.

compensation payments conditioned to the actual reinstatement of the environment.[7]

In summary, the UNCC found Iraq liable to compensate for damage to the environment of other states when this damage resulted from the war. In addition, the Commission revealed that the concept of relevant damage extends to the environment *itself*, including environmental values. Regarding remediation, the Commission provided compensation for expenses with monitoring and assessment of the damage, allowing the harmed party to prepare its claim and overcome the evidentiary burden. In addition, it generally assessed compensation on the basis of the cost of restoring the environment of affected areas. Within the UNCC, the loss of environmental values was compensated based on the cost of establishing and maintaining new nature reserves to provide similar values to the original area, until its complete recovery, in which case took several decades. Finally, the Commission expressed the obligation of states to the international community to actually use the proceeds of compensation for the betterment of the environment, as originally claimed.

2.3. The Concept of Damage in the ARSIWA and the Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities

The International Law Commission completed the first part of its mandate on state responsibility in 2001, when it released the Draft Articles on the Responsibility of States for Wrongful acts (ARSIWA). As discussed in

[7] Refer to Chapter 6, Conclusion.

Chapter 3, the ARSIWA was general in nature and did not provide for every specific case, notably the concept of relevant transboundary damage and its reparation.[8] Regarding reparation of damage to other states, Article 31 of the Draft Articles provides that both material and moral *injuries* are subject to *full reparation.*[9] Commentaries to the document suggest that, in principle, the obligation to provide full reparation extended to damage to the environment of other states.[10]

Although Article 36 of the ARSIWA restricts compensation to financially assessable damage, the provision in itself, as previously discussed, does not exclude the compensability of environmental damage.[11] In this respect, commentaries to Article 36 recalled the concept of damage provided in UNCC Governing Council Decision 7 which includes damage to the environment. It conceded that, so far, international practice had not awarded compensation for this damage, aside from pollution remediation and reduction in property value. However, it acknowledged the reality and the relevance of environmental damage which extends beyond these aspects. As a result, the commentary suggests that the concept of relevant damage extends to the loss of environmental values, among which is the loss of biodiversity and amenity values. In addition, commentaries to the ARSIWA suggest that the concept of relevant damage extends beyond clean-up, to encompass losses to the

[8] On the ARSIWA, refer to Chapter 3, section 2.1.
[9] ILC, ARSIWA (n 5) Article 31.
[10] Ibid, Article 31, Commentary 8-10.
[11] Refer to Chapter 3, section 2.1.

environment itself and its instrumental and, arguably, intrinsic values expressed by biodiversity.[12]

The ILC concluded its mandate on the subject with the adoption, in 2006, of the Draft Principles on Allocation of Loss.[13] According to its commentaries, the document addresses the concern of the international community with the achievement of sustainable development.[14] Unlike previous ILC documents, the 2006 Draft Principles provided a comprehensive definition of damage. Its Principle 2 provides that "damage" comprises harm to the environment *per se*, which includes the 'loss or damage by impairment of the environment'[15] and the 'costs of response measures of reinstatement of […] the environment'.[16] Furthermore, it provides a broad definition of "environment", which encompasses living and non-living elements of the environment, among which are included the 'air, water, soil, fauna and flora' and their interactions.[17] Supporting this broad concept, commentaries to the document pointed to the evolution of treaty-based liability regimes[18] and the UNCC practice on compensation for environmental damage.[19] As a result, it noted the compensability of damage to the environment *per se,* 'allowing compensation for loss of "non-use value" of the environment'.[20]

[12] ILC, ARSIWA (n 5) Article 36, Commentary 14-15.
[13] ILC, '2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities' UN Doc A/CN.4/577, Add.1 and Add.2 (2006) II (2) YILC 59 (2006 Draft Principles).
[14] Ibid, Preamble.
[15] Ibid, Principle 2(a)(iii).
[16] Ibid, Principle 2(a)(iv).
[17] Ibid, Principle 2(b).
[18] Ibid, Article 2(2)(d); Refer to Chapter 5(3).
[19] 2006 Principles, Principle 2, Comments 15 and 18.
[20] Ibid, Principle 2, Commentary 18.

Finally, Principle 3 provides that, among the document's purposes is to protect the environment, especially through the 'mitigation of damage to the environment and its restoration or reinstatement'.[21]

It is worth noting that the 2006 Draft Principles apply to damage arising from activities 'not prohibited by international law'.[22] However, as discussed in Chapter 3, when damage arises as a result of breaches of the preventive obligation, the breach will consist of a wrongful act of the responsible state. Transboundary damage will generally result from a wrongful act (except where it happens despite the origin state having adopted all necessary measures to prevent it). Arguably, the concept provided in the Draft Principles extends to damage resulting from wrongful acts in general. There is little justification for different concepts of damage according to their origin, especially for providing a more rigorous definition for damage resulting from activities which are not prohibited, as compared with those resulting from acts which are clearly wrongful. Moreover, the harmful result is ontologically identical in both situations. An opposite conclusion would result in a concept of damage that is broader when harms result from socially accepted activities, and more restricted when it results from wrongful acts. As a result, it is possible to extrapolate the concept of damage within the 2006 Principles, to apply it to damage to the environment of other states in all contexts of wrongful acts.

[21] Ibid, Principle 3.
[22] Ibid, Principle 1.

In essence, these developments may allow for the following conclusions. Firstly, the concept of relevant, compensable damage in international law appears to extend to the environment *itself*, including biotic and abiotic elements, natural resources, and their interaction, as well as aspects of landscape, and reasonable response measures. In addition, the concept of damage appears to encompass the environment's intrinsic value. Regarding its compensation, the documents reveal that the focus should be on measures that mitigate the damage and lead to the restoration of the environment. It should be noted, however, that the 2006 Draft Principles represent mostly an attempt at progressive development of the law, as opposed to the codification of existing customary rules. [23]

2.4. The Concept of Damage and its Reparation in International Precedents

In the last few years, the subject has found its way into the case law, which provided significant clarity to the concept of damage. Chapter 7 discussed that, since the mid-2000s, several successive claims for reparation for damage to the environment have reached the International Court of Justice (ICJ). In the *Aerial Herbicide Spraying case*, Ecuador sought compensation for damage to, among others, its areas of wilderness and fauna. The litigation ended in a settlement which included the payment of a significant sum in compensation for Ecuadorian losses.[24]

[23] Alan Boyle, 'State Responsibility and International Liability for Injurious Consequences of Acts Not Prohibited by International Law: A Necessary Distinction?' (1990) 39 *ICLQ* 1, 8.
[24] Refer to Chapter 7, section 4.1.

A few years later, in the *Certain Activities case,* Costa Rica requested compensation for an area of natural reserves consisting of internationally protected wetlands. The claim was shortly followed by the *Construction of a Road* case, wherein Nicaragua claimed compensation for damage to riparian waters and ecosystems.[25] The *Certain Activities* and *Construction of a Road* cases provided the ICJ with its first opportunity to resolve a compensation claim referring to damage to the environment of other states. In the *Construction of a Road case*, the claim for compensation for environmental damage was dismissed for lack of evidence of actual damage. However, in the *Certain Activities case,* the ICJ found damage to the environment which directly resulted from the wrongful incursion of Nicaragua's personnel in Costa Rican territory. This gave the Court an opportunity to settle the discussion over the responsibility of states for the reparation of the environment of other states when damage results from wrongful acts.[26]

In its judgment on compensation, the Court found that the concept of damage extends to the environment 'in and of itself',[27] including 'payment for the restoration of the damaged environment' and 'the ability of the environment to provide goods and services'.[28] Since the notion of "environmental goods and services" is included in the concept of instrumental values, the award settles the relevance of damage to instrumental values. It should be stressed, however, that the Court was

[25] Refer to Chapter 7, section 4.2.
[26] Refer to Chapter 7, section 4.2.
[27] *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v Nicaragua)* (Compensation, Judgment) [2018] ICJ Rep 15 (*Certain Activities*, Compensation, Judgment), Para 41.
[28] Ibid, Para 42.

silent about the compensability of nature's intrinsic values, as these values are not included in the notion of "environmental services".

The ICJ also found that the principle of full reparation imposes on states the obligation to fully compensate for environmental losses.[29] Within the obligation of compensation are included costs with claim preparation costs[30] and restoring the affected environment to its previous state. Regarding losses of environmental values, the ICJ found no specific methodology for calculating compensation for this damage in international law, which led the Court to award compensation through a lump sum.[31] Shortly later, the ICJ confirmed these findings in the *Armed Activities Case*, where it found states responsible for damage to natural resources, including the fauna and flora, of other states. Following its precedent, the Court used an overall assessment to determine compensation through the award of a lump sum.[32]

In summary, an assessment of the recent case law revealed that, according to the ICJ, states are responsible for damage to the environment of other states in the broadest sense. In addition, the concept of damage extends to the environment itself, instrumental values (expressed as "ecosystem goods and services") and natural resources. The decisions were not clear about the compensability of the environment's intrinsic values but did not expressly exclude them.

[29] Ibid, Para 41.
[30] Ibid, Para 87.
[31] Ibid, Para 52.
[32] Refer to Chapter 7, section 4.3.

These precedents reveal that, according to the ICJ, states are bound to compensate for costs incurred in demand preparation, environmental restoration, and the loss of environmental values. Finally, in light of the uncertainties surrounding this damage, including the evidentiary obstacles in defining its extent, the Court opted for the use of overall assessments to arbitrate compensation for environmental damage through lump sums.

2.5. Summary of Findings

The findings regarding the concept of damage across all areas researched should be systematised. First and foremost, they reveal that states currently have an obligation under international law to act diligently to abstain from causing harm to the environment of other states, including their natural environment and environmental values. Breaches of this obligation can be deliberate, or a result of the lack of due diligence of a state in the prevention of transboundary damage to the environment. This research revealed that states are responsible for breaches of the obligation, which results in the secondary obligation of reparation.

The next step is to address what constitutes the concept of relevant damage that deserves material reparation. This research revealed that, particularly after the ICJ rulings in the *Certain Activities* and *Armed Activities* cases, there is enough evidence that damage to the environment itself and its environmental values represents relevant damage in the law of state responsibility. Insofar as nature's values are

concerned, the fact that states owe compensation for restoration costs, even where the environment is devoid of economic value, expresses an implicit recognition of its intrinsic value. The discussed cases revealed that the ICJ standard for addressing pure environmental damage is by awarding compensation consisting of the sum of several factors. From claim preparation costs with establishing baseline conditions and revealing the necessary measures of reinstatement, compensation extends to mitigation costs, preventive measures (such as clean-up), and restoration of the harmed environment to its previous state of general functionality.

Finally, the case law from the ICJ revealed that losses of intangible aspects of the environment also deserve compensation. In that case, in the absence of a methodology accepted by international law, the Court opted for the use of overall assessments that led to the award of lump sums which are not required to be used to benefit the environment. These findings are in contrast with the UNCC practice, where losses of intangible elements of the environment and its values were addressed by funding the creation and maintenance of natural reserves for an extended period. These reserves are supposed to provide similar elements and values to those harmed.

Overall, evidence to suggests that, in order to be compatible with the principles of international environmental law, reparation should firstly and foremost involve the reinstatement of the harmed environment. The UNCC practice revealed one manner to address losses of environmental

values, through the finding funding for natural reserves in alternative areas. Another manner to compensate for these losses is that used by the ICJ, which used overall assessments to award compensation in the form of lump sums. Finally, although the use of awards for the actual relief of the environment is in line with environmental values and with principles of international environmental law, it does not seem to be required from affected states.

3. Discussion on Findings on the Responsibility of States for Transboundary Damage and on its Reparation

This research's findings revealed that, at this stage, the concept of damage in international law encompasses at least the environment itself, as well as its instrumental values. These findings reveal that states have an obligation to provide reparation for this sort of damage, primarily by compensation. This compensation is generally calculated in reference to different costs. It might include the cost of claim preparation, mitigation and preventive measures, and restoration. Compensation may be tied to fund the creation and maintenance of nature reserves. Alternatively, it may be provided by lump sums reached by overall assessments. This section will discuss these findings across the materials researched and assess the relevance of each of these findings.

3.1. Costs from Claim Preparation

The reimbursement of costs from damage assessment and claim preparation is important, especially given the usually high cost involved

in producing evidence for the baseline conditions of the affected area, that is, its original conditions. The victim state must then prove that the area has been damaged and that such damage has been a result of a wrongful act of another state.[33] In addition, potential claimants face the burden of proof of the extent of the damage and of the adequate measures to compensate for the losses.[34] We need to bear in mind that, particularly where the damage concerns transboundary harm resulting from non-prohibited activities, the damage may be revealed after a long period of time.[35] Moreover, the environment is usually exposed to several concomitant external aggressions from different sources, which makes it even harder to prove a causal link between a particular wrongful act and the harm verified.[36]

Our research revealed evidence of international practice and a precedent that confirms that these expenses are compensable in international law. Within the UNCC environmental awards, these costs have been extensively provided during the first instalment of environmental claims.[37] Similarly, in the *Certain Activities* case, the ICJ awarded compensation for reasonable expenses incurred with this purpose.[38] As a result, when considering environmental claims, states may feel more comfortable in

[33] Robin R Churchill, 'Facilitating (Transnational) Civil Liability Litigation for Environmental Damage by Means of Treaties: Progress, Problems and Prospects' (2001) 12 *YIEL* 3, 33.
[34] UNCC Governing Council, 'Report and Recommendations Made by The Panel of Commissioners Concerning the First Instalment Of "F4" Claims' (22 June 2001) S/AC.26/2001/16 (First Instalment), Para 31.
[35] Peter Wetterstein, 'A Proprietary or Possessory Interest: A Condition Sine Qua Non for Claiming Damages for Environmental Impairment?' in Peter Wetterstein (ed) Harm to the Environment: The Right to Compensation and the Assessment of Damages (Clarendon Press Oxford 1997), 29-30.
[36] Mark Wilde, *Civil Liability for Environmental Damage: Comparative Analysis of Law and Policy in Europe and the US* (Wolters Kluer 2015), 71.
[37] UNCC, First Instalment (n 34) Para 387-389, 393-395, 398-401.
[38] *Certain Activities*, Compensation, Judgment (n 27), Para 110, 116, 122, 124, and 131.

producing evidence of the extent and causal link of damages, increasing their chances of success. Given that these costs may be particularly relevant, their costs might be prohibitive for some states. However, given the confidence that these expenses may be reimbursed in future, this may be decisive in encouraging states to bring claims for compensation for environmental damage to their territory.

3.2. Costs of Prevention and Mitigation

The findings in this research strongly support the compensability of expenses from damage mitigation and control. These are immediate costs after a catastrophe to contain the spread of its effects into the environment. Within treaties providing for the reparation of transboundary damage, since the 1984 Amendment to the 1969 CLC, virtually all agreements provide compensation for costs from these measures.[39] Among the provisions of ILC documents which resulted from its mandate on the responsibility of states, Principle 2 of the 2006 Draft Principles on the Allocation of Loss provides the costs arising from reasonable response measures as part of the concept of damage.[40]

Similarly, this research's findings revealed that the UNCC awarded compensation for response measures which aimed to prevent damage aggravation and mitigate its effects, even when they were incurred by third states.[41] Finally, the precedent from the *Certain Activities* award on

[39] Refer to Chapter 5, section 2 and 3.
[40] ILC, '2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities' (2006) II (2) *YILC* 59 UN Doc A/CN.4/577, Add.1 and Add.2 (Principles on the Allocation of Loss), Principle 2(b).
[41] Refer to chapter 6, Section 3.

compensation supports the compensability of the costs of preventive and mitigation measures.[42] The practice is compatible with the aim of enhancing the prevention of environmental damage, encouraging states to engage in the control of the spread of damage as a result of environmental catastrophes.

3.3. Costs of Clean-up and Reinstatement of the Environment

This research revealed that, as of now, the expenses incurred from clean-up and reinstatement are part of the concept of relevant transboundary damage. Among international agreements, virtually all provide for the compensability of these expenses, particularly from the 1984 Protocol to the 1969 CLC. The research revealed that, since its adoption, all subsequent treaties dealing with transboundary damage and its reparation provide for the costs of clean-up and actual restoration of the environment.[43] This has also been the case in the UNCC practice. The assessment of the available reports and decisions of the Commission revealed that the actual restoration of the damaged environment is the primary aim of the Commission regarding this sort of damage.[44]

Similarly, within the ILC mandate on the responsibility of states, the answer seems to be affirmative. The ILC Articles on Prevention provides, in Principle 2, that the environment is within the concept of relevant transboundary damage.[45] While the ARSIWA does not provide a

[42] Refer to Chapter 7, section 3.
[43] Refer to Chapter 5, section 2.
[44] Refer to Chapter 6, section 4.2.
[45] ILC, 'Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, with commentaries' (2001) II(2) YILC 148, Principle 2.

definition of transboundary damage, its commentaries reveal that it extends to the environment and at least some environmental values, such as biodiversity.[46] The Draft Principles on the Allocation of Loss provide damage to the environment within the definition of transboundary damage.[47] Last but not least, the precedent from the *Certain Activities* confirmed that states are responsible for damage to the natural environment of other states as a result of wrongful acts. In that case the ICJ also confirmed that its reparation includes the cost of clean-up and restoration of the affected environment.[48] Shortly afterwards, another precedent from the same court, in the *Armed Activities on the Territory of the Congo* confirmed that states are responsible for damage to the environment of other states and for the loss of natural resources.[49] Overall, these findings leave little room for doubt that, as of now, states are responsible for damage to the environment of other states, and that this includes the cost of clean-up and restoration of the environment.

3.4. Compensation for Losses of Environmental Values

Similarly, this research's findings confirm that at least some environmental values are encompassed within the concept of relevant transboundary damage. Within treaties, attaching compensation to the actual reinstatement of the environment supports the requirement for the restoration of at least some environmental values and ecosystem

[46] ILC, 'Draft articles on Responsibility of States for Internationally Wrongful Acts' (2001) II (2) *YILC* 31 UN Doc A/56/10 (ARSIWA), Article 36, Commentary 15.
[47] Refer to Chapter 7, section 1.
[48] Refer to Chapter 7, section 4.2.
[49] Refer to Chapter 7, section 4.3.

services. As discussed, all treaties since the 1980s that deal with the subject tie compensation to the actual restoration of the harmed environment.[50] Within the ILC study on the subject, as discussed above, commentaries to the ARSIWA state that the concept of damage extends to damage to the environment of other states and its environmental values.[51] Similarly, commentaries to the 2006 Principles on Allocation of Loss allowed 'compensation for loss of "non-use value" of the environment'.[52]

Within the UNCC practice, the Commission recognised the responsibility of Iraq for the temporary loss of environmental values. As discussed in Chapter 6, where affected states claimed compensation, the Commission provided compensation that covered the cost of creating and maintaining areas that would provide similar environmental services.[53] In the *Certain Activities* case, the ICJ confirmed that the loss of "environmental goods and services", which account for, at least, the loss of instrumental values, including direct and indirect use values are relevant and compensable.[54] Finally, in a Separate Opinion, Judge Cançado Trindade pointed out the need to address the 'intrinsic value of the environment'. [55] The implication of the recognition of environmental values and of their compensability will be discussed in the following section.

[50] Refer to Chapter 5, sections 2 and 3.
[51] ILC, ARSIWA (n 46) Article 36, Commentary 15.
[52] Ibid, Principle 2, Commentary 18.
[53] Refer to Chapter 6, section 4.3.
[54] Refer to Chapter 7, section 4.2.
[55] *Certain Activities*, Compensation, Judgment (n 27) Separate Opinion of Judge Cançado Trindade, Para 70.

3.5. Requirement of Actual Reinstatement of the Environment

The final aspect that this research revealed is the expectation that reparation leads to the actual reinstatement of the environment. This requirement is spread across liability treaties, which calculate compensation on the basis of reinstatement *actually undertaken or to be undertaken.*[56] The UNCC also required that awards were used for their original purpose of restoring the natural environment or establishing additional areas of wilderness and maintaining them. The Commission established a follow-up program for this purpose, to ensure that funds were used for the betterment of the environment.[57]

Although the actual reinstatement was not debated in the discussed ILC documents, there seems to be an expectation that awards of compensation for the reinstatement of the environment are actually used for this purpose. In the 2006 Principles on the Allocation of Loss, the ILC stated the purpose to preserve and protect the environment, 'especially with respect to mitigation of damage to the environment and its restoration or reinstatement'.[58] In the *Certain Activities case*, the Separate Opinion of Judge Cançado Trindade remarked on the need to provide rehabilitation to the natural environment. [59] However, the discussed ICJ jurisprudence on the subject does not require the actual use of the proceeds of compensation for the relief of the environment.

[56] Refer to Chapter 5, section 2 and 3.
[57] Refer to Chapter 5.2.
[58] Draft Principles, Principle 3.
[59] *Certain Activities*, Compensation, Judgment (n 27) Separate Opinion of Judge Cançado Trindade, Para 33-52.

4. The Recognition of the Relevance of Environmental Values and their Reparation

The previous sections revealed that, at the present time, international law recognises the responsibility of states for damage to the environment of other states which results from acts considered wrongful. Equally, it revealed the secondary obligation to provide reparation at least for the costs of claim preparation, prevention and mitigation, clean-up and reinstatement of the environment, as well as for losses of some environmental values. Damage to instrumental values, sometimes referred to as “environmental services”, results in the obligation to pay compensation.

The UNCC practice suggests that compensation for losses of environmental values may be calculated on the basis of the cost of creating and maintaining natural reserves that will provide similar values until the complete recovery of the affected area. However, the case law from the *Certain Activities case* revealed that this is not the only form of compensation for environmental values accepted in international law. To the ICJ, it will be for claimants to agree on the form to assess these losses. Where the parties did not agree on a suitable form of compensation, the Court has twice provided compensation through overall assessments that led to lump sums. Finally, when states claim compensation for clean-up and reinstatement costs, there may be a general expectation that the proceeds of compensation will be used for this purpose, and result in the restoration of the environment. However, the ICJ did not expressly mention this requirement in its recent awards.

Some of these findings suggest the recognition of environmental values and their compensability in international law, and the expectation of the restoration of the natural environment regardless of the economic interest in the area, revealing concern for the maintenance of the overall state of the natural environment wherever it is located. Valuing the environment in and of itself, regardless of how useful it appears to states, represents an implicit shift towards the recognition of nature's intrinsic value.

Such a conclusion is supported by some of the scholarly literature. To scholars, providing material reparation for environmental damage regardless of its utility for human purposes (instrumental value) implies a recognition of the environment's intrinsic value.[60] This recognition results from the fact that there are only two orders of values, instrumental and intrinsic. In the *Certain Activities* case, the ICJ provided compensation for the cost of restoring an area of wetlands with no evident utility for human purposes. Providing for the reinstatement of the environment regardless of its use to humans (instrumental value) amounts to an implicit recognition of nature's intrinsic value. Since the law would not provide reparation for worthless resources, the necessary conclusion is that the environment is valuable regardless of its human use, that is, regardless of its instrumental value. The provision for its reinstatement in all cases is an expression of intrinsic value, that is, the environment's recognition regardless of its usefulness for an external valuer.

[60] Refer to Chapter 5, section 4

Similarly, the Millennium Ecosystem Assessment has acknowledged the recognition of nature's instrumental and intrinsic values. The initiative represented a partnership between UN agencies, scientific organisations, and the private sector.[61] Launched in 2005, its report on Ecosystems reflected that 'the level of biodiversity that survives on Earth will be determined not just by utilitarian considerations but to a significant extent by ethical concerns, including considerations of the intrinsic values of species'.[62] The scepticism over the compensability of nature's intrinsic values[63] no longer stands, with Special Rapporteur Pemmaraju Rao admitting the 'evidence of a predominant trend' towards the recognition of nature's intrinsic value in international law,[64] and acknowledging the importance of extending compensation 'to include loss of intrinsic value'.[65] From this thesis' findings, international law addresses nature's intrinsic value not only by seeking to conserve it, but also on the basis of ensuring that damage to the environment is addressed, insofar as possible, through redress to the environment itself through the active pursuit of the actual restoration of the affected environment, or at least of its broad functionality, and from the compensation for the cost of creating additional reserves that provide habitats to native species.

[61] --, *Ecosystems and Human Well-Being* (Island Press 2005), ii
[62] Ibid, 58
[63] International Law Commission, 'Eleventh Report of the Special Rapporteur', Mr Julio Barboza (47th session of the ILC (1995) UN Doc A/CN.4/468, Para 18
[64] ILC, 'Third report on the legal regime for the allocation of loss in case of transboundary harm arising out of hazardous activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' (2006) UN DOC A/CN.4/566, Para 22
[65] ILC, 'Second report on the legal regime for the allocation of loss in case of transboundary harm arising out of hazardous activities, by Mr Pemmaraju Sreenivasa Rao, Special Rapporteur' (2004) UN Doc A/CN.4/540, Para 31

5. Practical Considerations on Reparation and Compensation

The previous sections discussed this research's findings, which reveal that the international legal system currently treats the environment as relevant regardless of its economic expression. This has resulted in the recognition of the relevance of damage to the environment, leading to the responsibility of states for this sort of damage. As the environment is valuable, violations of conservation rules that result in damage should be addressed, preferably by targeting values similar to those which have been lost. The following are some examples from international practice that appear to have successfully addressed the problem of environmental reparation.

5.1. Natural Recovery[66] or Primary Restoration[67]

As with other systems in general, ecosystems react to disturbances towards restoring their balance and integrity.[68] Passive remediation or natural recovery relies on the environment's capacity to heal itself and will generally follow the clean-up of the area.[69] To scholars, this should be the preferred approach to restoring degraded environments.[70] In some cases, clean-up may require phytoremediation which uses plants to remove

[66] *Certain Activities*, Compensation, Judgment (n 27) Para 43.
[67] UNCC, UNCC Governing Council Panel of Commissioners, 'Report And Recommendations Made By The Panel Of Commissioners Concerning the Fifth Instalment of "F4" Claims' (30 June 2005) UN Doc S/AC.26/2005/10 (Fifth Instalment), Para 82.
[68] Michael Allaby, *Basics of Environmental Science* (Routledge 2000), 167.
[69] Fourth Instalment I (n 26) Para 50.
[70] Juergen Geist and J S Hawkins, 'Habitat recovery and restoration in aquatic ecosystems: current progress and future challenges' (2016) 26 *Aquatic Conserv*ation: *Marine and Freshwater Ecosystems* 942, 956.

pollutants from contaminated areas.[71] For the UNCC, the ultimate goal should be 'to *restore* what has been damaged to integrity'.[72] The Commission defined primary restoration,[73] or primary remediation,[74] as 'restoring the environment to [previous] conditions, in terms of its overall ecological functioning'.[75]

To commissioners, the recovery process should rely primarily on 'natural revegetation processes'.[76] In *Award 5000451 (Saudi Arabia)* the Commission remarked that this is preferable to active interventions, which may result in impacts equal to or even greater than their expected benefits.[77] Despite the environment's capacity for self-healing, natural recovery may involve interventions of lesser complexity. Among interventions to facilitate natural recovery is the addition of organic fertilisers to the soil of damaged areas.[78] This strategy was successfully used to address damage to the soil resulting from the *Exxon Valdez* spill and has proven to enhance natural regeneration by fomenting the reproduction of necessary soil microorganisms.[79] Similarly, UNCC *Award 5000450 (Kuwait)* suggested soil recovery by fragmentation and organic

[71] Anne S Moffat, 'Plants Proving their Worth In Toxic Metal Cleanup' (1995) 5222(269) *Science* 302, 302.
[72] UNCC, Fifth Instalment (n 67) Para 80.
[73] Ibid*,* Para 82.
[74] European Liability Directive, Annex II, Paragraph 1(a).
[75] UNCC Governing Council Panel of Commissioners, 'Report and Recommendations Made by The Panel of Commissioners Concerning the Third Instalment Of "F4" Claims' (18 December 2003) UN Doc S/AC.26/2003/31 (Third Instalment), Para 48.
[76] UNCC, Third Instalment (n 75) Para 143.
[77] Ibid*,* Annex IV Para (2).
[78] UNCC, Third Instalment (n 75) Technical Annexes, Para 4(c).
[79] James R Bragg *et al*, 'Effectiveness of bioremediation for the Exxon Valdez oil spill' (1994) 368 *Nature* 413, 418.

amendments to create appropriate conditions for native species to recover. [80]

5.2. Active Restoration[81]

The relevant literature explains that, after a certain threshold of disruption, ecosystems may become unable to recover naturally.[82] In these cases, the environment may require more intensive interventions, with active restoration or remediation measures to allow the original area to recover. These are interventions in the same location which contribute to its recovery. In the *Certain Activities case*, the ICJ ruled that, since natural recovery is not always sufficient for the environment's complete recovery to its previous state, compensation should cover the cost of these interventions.[83]

Among active restoration measures is the introduction of native specimens in damaged ecosystems. For example, UNCC *Award 5000450 (Kuwait)* covered the cost of replanting in harmed areas of island habitats.[84] Other cases may require more extensive interventions. For example, following the 1986 Sandoz chemical spill on the Rhine River, states implemented several active restoration measures. Among those, the Rhine Action Programme provided for constructing fish ladders and

[80] UNCC, Third Instalment (n 75) Annex IV.
[81] *Certain Activities*, Compensation, Judgment (n 27) Para 43.
[82] Allaby (n 68) 168.
[83] *Certain Activities*, Compensation, Judgment (n 27) Para 43.
[84] UNCC, Third Instalment (n 75) Annex IV, Para 4.

locks to help migratory fish species recover their previous populations.[85] Similarly, UNCC *Award 5000451 (Saudi Arabia)* covered the construction of canals to restore the area's hydrological character,[86] followed by introducing plant specimens to 'enhance natural recolonization [… and] accelerate recovery'.[87]

At this point, the restoration of environments through active measures is widely used worldwide. The Food and Agriculture Organisation's *State of the World's Forests 2020 Report* reveals over 294 million hectares of planted forests around the world, many of which were planted in the context of ecosystem restoration. Of these, 55% have achieved a level of success to resemble mature natural forests.[88] Similarly, wetland restoration is widely used worldwide at a reasonable cost,[89] with the reinstatement of Florida's Everglades among one of the often-cited examples.[90]

Notwithstanding, there are restrictions to active restoration. Restoration measures must remain reasonable or risk further harming the environment. For example, after the *Torrey Canyon* spill on the coast of England, response measures may have harmed the environment even

[85] International Commission for the Protection of the Rhine, *Rhine Action Programme* (Technisch-wissenshcftlishes Sekretariat 1987), 11; and International Commission for the Protection of the Rhine, *Bilanz Aktionsprogramm Rhein* (Internationale Kommission zum Schutz des Rheins 2003), 18.
[86] Ibid, Annex VI, Para 4-5.
[87] UNCC, Third Instalment (n 75) Para 9.
[88] FAO and UNEP, The State of the World's Forests 2020. Forests, Biodiversity and People (FAO 2020), 16.
[89] Roy R Lewis, 'Ecological Engineering for Successful Management and Restoration of Mangrove Forests' (2005) 24(4) *Ecological engineering* 403, 412.
[90] Qingqing Zhao et al, 'A Review of Methodologies and Success Indicators for Coastal Wetland Restoration' (2016) 60 Ecological Indicators 442, 445.

more than the original spill.[91] This understanding led the UNCC to rule that active measures must remain reasonable and not risk causing additional harm to the environment.[92] As a result, the Commission ruled out unreasonable measures such as the removal and industrial processing of extensive quantities of soil.[93]

5.3. Irrecoverable Damage

Regarding reparation of irreversible damage, Chapter 6 has already described how the UNCC ruled that states should 'provide an equivalent' for the harmed environment.[94] Scholars consider the creation of substitute ecosystems a feasible strategy.[95] An early example of reparation through alternative areas was provided by the Ramsar Convention. Adopted in 1972, the Convention provides a compensatory system for the deletion of listed sites by creating natural reserves in alternative locations.[96] Similarly, the Nagoya-Kuala Lumpur Liability Protocol provides for introducing similar elements to the same or alternative locations.[97] Accordingly, the 2006 Draft Principles considered this a 'reasonable' alternative for reparation.[98]

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[91] Allaby (n 68) 275.
[92] Fourth Instalment I (n 26) Para 9; also, UNCC, Third Instalment (n 75) Para (2).
[93] UNCC, Third Instalment (n 75) 128, 181.
[94] UNCC, Fifth Instalment (n 67) Para 80; also, Bjorn Sandvik and Satu Suikkari, 'Harm and Reparation in International Treaty Regimes: An Overview' in Peter Wetterstein (ed) *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Clarendon 1997), 60
[95] Geist (n 70) 956.
[96] The Convention on Wetlands of International Importance, especially as Waterfowl Habitat (adopted 2 February 1971, in force 21 December 1975) 996 UNTS 245 (Ramsar Convention), Art 4.2.
[97] N-KL Supplementary Protocol Art 2(2)(d)(ii)(b).
[98] Draft Principles on Allocation of Loss, Principle 3, Commentary 7.

5.4. Accounting for Interim Losses of Environmental Values

It is undeniable that, after the environment is damaged, its recovery will demand a period of time which, sometimes, may be quite long. As a result, between the moment the environment is damaged and its complete recovery, the area will be unavailable and unable to offer environmental values (which some may refer to "producing" ecological services). For example, human populations will be prevented from benefiting from them as recreational grounds, species will be unable to use them as habitats, the area will not perform as many carbon sequestration and flood control functions, etc.

This, and the extended period of time sometimes needed for the recovery of the environment, has led international law to accept the compensability of temporary, or interim, losses of environmental values. The UNEP Group of Experts on Liability and Compensation of Environmental Damage concluded that one of the best alternatives to compensate for these losses is the payment of sums to fund the cost of creating and maintaining "substitute resources" for the duration of the recovery process of the original area.[99] Scholars agreed that compensation should fund the creation, recovery, and maintenance of substitute habitats for the duration of the process of recovery of the original areas.[100] This alternative was

[99] UNEP Working Group of Experts, 'Conclusions by the Working Group of Experts on Liability and Compensation for Environmental Damage Arising from Military Activities' in Alexandre Timoshenko (ed), Liability and Compensation for Environmental Damage: Compilation of Documents (UNEP 1998), Para 55 and 63.

[100] Robin C Whytock et al, 'Bird-community Responses to Habitat Creation in a Long-term, Large-scale Natural Experiment' (2018) 32(2) Conservation Biology 345, 350-352; also, John Lawton, 'Making Space for Nature: A Review of England's Wildlife Sites and

used during the UNCC practice. For instance, *Award 5000460 (Kuwait)* compensated for the cost of creating and maintaining shoreline reserves for 30 years, as this was the approximate period of time that experts predicted it would take for the complete recovery of the harmed areas.[101] Similarly, *Award 5000463 (Saudi Arabia)* covered the cost of creating and maintaining 46sq km of shoreline reserves for an identical period to compensate for the loss of ecological services.[102]

5.5. Qualitative Interventions

The alternatives discussed so far consist of quantitative approaches to compensation. Aside from that, compensation may also include a qualitative aspect, which consists, for example, of granting protected status to resources, such as areas of wilderness or species which would otherwise be vulnerable. Granting protected status to areas or species may enhance their recovery process, giving their populations an evolutive advantage.[103] In this sense, UNCC *Award 5000460* awarded compensation consisting of the cost of creating and maintaining additional areas of wilderness (quantitative aspect), adding that it should receive *preserve* status (qualitative aspect).[104] In 2017, the project allowed the

Ecological Network' (UK Department for Environment, Food and Rural Affairs 2010), 84-85; Jonathan W Humphrey, 'What can studies of woodland fragmentation and creation tell us about ecological networks? A literature review and synthesis' (2015) 30 *Landscape Ecology* 21, 22-23; Jessica Ware and Ruth Callaway, 'Public perception of coastal habitat loss and habitat creation using artificial floating islands in the UK' (2019) 14(10) *PLoS One* 1, 2.

[101] UNCC, Fifth Instalment (n 67) Para 442-453.

[102] UNCC, Fifth Instalment (n 67) Para 613-636.

[103] International agreements have repeatedly granted protected status to endangered species, allowing for the recovery of their populations. See Convention on International Trade in Endangered Species of Wild Fauna and Flora (adopted 3 March 1973, into force 1 July 1975) 993 UNTS 243 (CITES).

[104] Fifth Instalment Fifth Instalment (n 67) Para 442-453.

submission of the area to the World Heritage List.[105] Similarly, *Award 5000463 (Saudi Arabia)* awarded compensation by giving special protected status to areas of wilderness.[106]

5.6. Quantification

As discussed, in some cases, compensation will consist of the cost of creating and maintaining nature reserves in alternative locations, which should provide similar values to the harmed area. This will inevitably involve some measure of equivalence between the original and new areas. Different methodologies have been used to calculate the extent of actions which effectively offset particular losses.[107] To scholars, assessments should include injury determination, quantification, and restoration planning, to calculate the primary and compensatory remediation interventions needed to offset remaining losses.[108] The appropriate methodology will depend on the peculiarities of each damage, such as its magnitude and impact on society.[109]

The UNCC has accepted the use of Habitat Equivalence Analysis to assess the extent of proposed interventions[110] and the time required to offset interim losses.[111] For instance, in *Award 5000460* HEA was used

[105] https://whc.unesco.org/en/tentativelists/6257/ accessed 18 January 2023.
[106] UNCC Follow-up Programme for Environmental Awards UN Doc UNCC/2015/1 (July 2016), 102
[107] Business and Biodiversity Offsets Programme, *Guidance Notes to the Standard on Biodiversity Offsets* (BBOP 2012), 97; also, Kimon Hadjibiros, *Ecology and Applied Environmental Science* (CRC 2014), 193-204.
[108] M T Huguenin et al, 'Assessment and Valuation of Damage to the Environment 'in Cymie R Payne and Peter H Sand Cymie R Payne and Peter R Sand (eds), *Gulf War Reparations and the UN Compensation Commission: Environmental Liability* (OUP 2011), 74-78.
[109] Hadjibiros (n 107) 195.
[110] UNCC, Fifth Instalment (n 67) Para 73, 81-82, 423.
[111] Ibid, Para 82.

to calculate the size of shoreline reserves to be implemented, with US$7,943,030 awarded in compensation.[112] After alterations,[113] the project was implemented in Sulaibikhat Bay, leading to relevant increases in biodiversity.[114] The fulfilment of the Kuwait follow-up program suggests the intervention's success.[115]

In contrast, the parties to the CBD have deemed '"one-size-fits-all" solutions for the ecosystem approach' to be unfeasible and undesirable.[116] Similarly, in the *Certain Activities* case, the ICJ recognised that 'international law does not prescribe any specific method of valuation for the purposes of compensation for environmental damage'.[117] In that same case, as discussed, the Court resorted to compensation by the award of a lump sum to address environmental losses that could not be precisely quantified. Later, in the *Armed Activities* case, the same Court reaffirmed these findings.[118] Accordingly, in the absence of an international agreement on the subject, the use of lump sums is likely to serve as a benchmark for similar future cases.

[112] Ibid, Para 443.
[113] UNCC, *Post-Conflict Environmental Restoration; the UNCC Follow-up Programme for Environmental Awards* UN Doc UNCC/2015/1 (July 2016), 54.
[114] Reem S Al-Nafisi et al, 'Positive Impacts of Mangrove Plantations on Kuwait's Coastal Environment' (2009) 4(26) *European Journal of Scientific Research* 510, 519.
[115] UNCC Governing Council, Decision 271 S/AC.26/Dec.271 (2013).
[116] CBD CoP, 'Ecosystem Approach' Decision IX/7 (19-30 May 2008) UN Doc UNEP/CBD/COP/DEC/IX/7, Preamble.
[117] *Certain Activities*, Compensation, Judgment (n 27) Compensation, Para 52.
[118] Refer to Chapter 7, Section 4.

5.7. Less-than-Optimal Choices for Environmental Reparation

This thesis has also assessed some less-than-optional choices for environmental reparation. Chapter 6 revealed that a few claims in the UNCC requested compensation for environmental damage based on elaborate schemes such as the removal and treatment of contaminated soil from extensive areas. The chapter revealed that, for various reasons, such requests were generally refused as unreasonable.[119]

Similarly, in the *Certain Activities* case, the ICJ denied Costa Rica's request for compensation for the cost of soil substitution. In the Court's view, this would compromise the ongoing natural recovery of the area.[120]

The award also revealed that basing compensation on economic assessments of "ecosystem services" led to an award considerably below the claimant's expectations.[121] Similarly, during the UNCC, Iran requested millions of dollars in compensation for damage to rangelands based on this methodology. The result was disappointing, with Iran being awarded a few thousand dollars as a result, which consisted of the market prices of the equivalent amount of animal fodder.[122] Both awards express the apparent resistance of international law to accommodating assessments based on abstract models of valuation.[123]

[119] Refer to Chapter 6, sub-section 4.4.1.
[120] Refer to Chapter 7, sub-section 4.2., "c"
[121] Ibid
[122] Fifth Instalment (n 1) Para 155-161 and 171-180; also, Gautier (n 42) 208.
[123] Refer to Chapter 5, sub-section 2.1.

6. Conclusion: The Current State of the Law Regarding Reparation of Environmental Damage and Opportunities for Further Research

Looking into the consequences of acts of states which cause damage to the environment of other states, this thesis revealed that reparation for environmental damage has evolved significantly, particularly in the last few decades. This reflects the evolution of the obligation of states to abstain from causing harm to the environment of other states. Given that, as of now, states have an obligation in international law to abstain from causing harm to the environment of other states, it is to be expected that the breach of this obligation leads to a secondary obligation to provide reparation.

This thesis revealed that international law has evolved to address the significance of the environment in instrumental and intrinsic terms. This led to the development of effective systems of redress. From the adoption of treaties to international documents and precedents, all point to adequate forms of addressing losses to the environment and environmental values. In the *Certain Activities case,* the ICJ has determined that states are responsible for damage to the natural environment. This damage creates the obligation for states to provide compensation for costs from claim preparation, mitigation measures, and the restoration of the harmed area, allowing it to provide its original ecosystem services. Confirming the compensability of certain environmental values, the Court awarded compensation for losses of environmental services in the form of lump sums.

6.1. The Current Law on the Responsibility of States for Environmental Damage and its Reparation

From our discussion, it is possible to state that, as of now,

a) States have an obligation under international law to act diligently to abstain from causing harm to the environment of other states, including their natural environment and its expressions, often referred to as “values”;

b) For these purposes, the concept of environment includes all aspects of the environment, losses of natural resources, and environmental values, regardless of their value to humans (instrumental value);

c) When, as a result of lack of due diligence, states cause damage to the environment of other states or knowingly allow third parties within their territories to cause such damage, this results in a secondary obligation to provide full reparation;

d) Damage to the environment represents material damage. As a result, reparation for this damage should be provided through remedies which tend to repair the damage, especially those which lead to restoration. Insofar as possible, reparation should extend to what is referred to as pure environmental damage and environmental values;

e) In international law, remediation for this sort of damage is generally provided through compensation, which may be calculated on the basis of the costs of mitigation, clean-up, and restoration of the harmed environment, and may also include the costs involved in claim preparation;

f) International law does not provide a specific assessment methodology to calculate the compensation for intangible damage to the environment and its values. To the ICJ, in the absence of an agreement between the parties, compensation for intangible losses of environmental assets and values should be provided in the form of lump sums resulting from overall assessments;

g) Some later liability agreements and the UNCC practice support the compensation for losses of intangible elements of the environment and environmental values in reference to the cost of creating and maintaining natural reserves for an extended period of time. Despite there being no evidence that this practice is required by customary international law, states are free to use this methodology to address cases of transboundary environmental damage;

h) There is an expectation that the proceeds of compensation should be used for the actual restoration of the environment. However, there is no sufficient evidence that this is required by international law.

In drawing this thesis to its conclusion, let us consider the way forward. What are the next steps in this evolution? As discussed in Chapter 1, the *UN Decade on Ecosystem Restoration (2021-2030)* creates momentum for states to address this important point of international law.[124] At this moment, the European Parliament is considering a regulation which may soon require its member states to restore 90% of degraded ecosystems

[124] Refer to Chapter 1, Section 1.3.1.

by 2050.[125] This thesis discussed one aspect which contributes to its degradation, that is, when it results from transboundary damage. It revealed that this poorly regulated area has witnessed important developments in the last few decades. The hope is that states seize the momentum to agree on a convention or a declaration of principles on the responsibility of states for damage to the environment.

6.2. A Comprehensive Approach to Environmental Reparation for a Sustainable Future

6.2.1. Remediation of Environmental Values

Looking into transboundary damage and its reparation from an ethical standpoint led to an inquiry into the responsibility of states for damage to the natural environment of other states. This approach appears to be in line with the need to tackle the decline of the Earth's natural systems and move towards the recognition of the compensability of nature's values. In the *Certain Activities* case, the award referred to compensation for the loss of environmental goods and services.[126] However, as previously discussed, in the strict sense, the definition of the term "ecosystem services" generally refers to anthropocentric values.[127] Therefore, it is not evident whether the *Certain Activities* award provided compensation for losses of intrinsic values.

[125] Proposal for a Regulation of The European Parliament and the Council on Nature Restoration (22 June 2022) available on <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0304> accessed 8 March 2022, Article 1 (2).
[126] Refer to Chapter 7, Section 4.2.
[127] Refer to Chapter 5, Section 3.1.1.

Chapter 2 provided an argument for the recognition of nature's intrinsic values, and Chapter 3 discussed how the preventive obligation does not exclude their protection. As a result, there is no reason to believe that, when the preventive obligation is breached, reparation should disregard losses of intrinsic values. Intrinsic values are not subjective, theoretical, or merely associated with feelings, instead, representing the recognition of the value of life *in and for itself* in all its forms.

Halting the decline of the Earth's natural systems demands the recognition of the value of the natural environment and its protection in all its forms and expressions. Providing full reparation for all losses of environmental assets, values, and natural resources represents a comprehensive approach to enhancing environmental protection. This approach would likely contribute to humankind's aim of achieving a sustainable future. Reparation for environmental damage should, therefore, assume the most comprehensive definition, to ensure the recovery of the environment *itself.*

A question that remains is how to provide meaningful remediation for these losses. As discussed in Chapter 2, the locus of intrinsic values is life in all its forms, either individually or collectively. An increase in the intrinsic value of a certain environment may therefore be achieved by restoring degraded areas and creating novel habitats, allowing wildlife to thrive (thus increasing the area's intrinsic value). Half a century ago, a similar approach was used in the Ramsar Convention on the Protection of Wetlands. In this respect, the Ramsar Convention is exemplary in providing a dual compensation system for the deletion or reduction of the

total area of listed wetland sites.[128] The Convention is among the first instruments to provide for nature compensation 'either in the same area or elsewhere'.[129] Ramsar's dual redress system applies following the deletion of listed wetlands, with states expected to provide a substitute area that is larger than the original (quantitative aspect). Further, it provides that the area must be granted *reserve* status (qualitative aspect).[130] This system appears to aim at a "net gain" for the environment.[131]

As discussed in Chapter 2, nature's intrinsic value is expressed through a profound respect for nature and our commitment to allow it to flourish. References to intrinsic value do not concern a separate value which is external to nature. Quite the contrary, this value is intrinsic to it and resides in life and its interactions. Intrinsic value is an interpretation of value expressed as respect for nature, by recognising its relevance regardless of its utility to humans. It means respecting the sacred value of every life form and its right to be left alone unless it conflicts with the need of other beings to preserve themselves. It considers all life forms as ends in themselves instead of as means to human ends. Accordingly, any

[128] Convention on Wetlands of International Importance, especially as Waterfowl Habitat (adopted 2 February 1971, in force 21 December 1975) 996 UNTS 245 (Ramsar Convention), Art 4.2.
[129] Ibid.
[130] Refer to Michael Bowman, 'The Ramsar Convention Comes of Age' (1995) 42(1) *Netherlands International Law Review* 1, 25.
[131] Gabriela G B Lima, 'Les diverses formes pour la compensation dans la protection juridique de l'environnement: un dé pour l'épistémologie juridique' (2014) 7 *Anuario Colombiano de Derecho Internacional* 161, 170. See also M Hrabanski, 'The Biodiversity Offsets As Market-Based Instruments In Global Governance: Origins, Success And Controversies' (2015) 15 *Ecosystem Services* 143, 143.

initiative for compensation that seeks nature's recovery, and which is not limited to its market value, is likely to address nature's intrinsic value.

Therefore, a reparation standard compatible with the ethical underpinnings of international environmental law should aid the ability of affected life forms and groups (species, ecosystems…) to flourish, regardless of their utility. This can be done both by "leaving it alone" and, in cases where we have interfered with it, by committing to aid its recovery to the widest extent possible.

The character of additionality exemplified in the Ramsar Convention, where compensation exceeds the evident material losses appears to be one way of expressing this respect and commitment. As a result, as an alternative means of addressing losses of intrinsic value, this thesis suggests that we orient compensation around a "principle of additionality", that is, aiming to reinstate an area of natural habitats that equals or even exceeds the area of the affected environment. In other cases, this may consist of funding the captive breeding of specimens, such as in UNCC *Claim 5000307*, where the award covered the costs of breeding the Arabian oryx and sand gazelles for later release into the wild.[132]

As we reach the end of this thesis, it is possible to present some suggestions. First and foremost, there needs to be a warning against economic assessments of nature that are restricted to market prices or even based solely on abstract models. While they may reveal the value

[132] UNCC GC, 'Report And Recommendations Made By The Panel Of Commissioners Concerning the Fifth Instalment of "F4" Claims' (30 June 2005) UN Doc S/AC.26/2005/10 (Fifth Instalment), Para 357-364.

of nature for humans, they risk undervaluing it by commoditising its elements and disregarding the suffering and loss of life involved in its destruction. In addition, these models are exceedingly complex and make it difficult to convince parties of the justice of a decision.

Secondly, there must a call for compensation to support measures that enhance the capacity of affected groups to thrive. Such measures may include clean-up and reinstatement, the creation of alternative ecosystems, off-site breeding of species, the introduction and care of native plant species, and the revegetation of additional areas to create new habitats. These initiatives should directly benefit the same beings or groups that have been harmed.

Finally, irrespective of the assessment methodology chosen, reparation should be guided by the principle of “no net loss”, aiming to offset all environmental losses incurred. Where compensation takes the form of lump sums, the amount awarded should be sufficient and allocated to offset all ecological losses arising from the harm. The implementation of these measures should contribute to the maintenance and improvement of the overall state of the planet’s natural systems.

The magnitude and gravity of global environmental problems no longer leave room to adhere to long-held views on state sovereignty. States must no longer be allowed to use sovereignty to pursue selfish national interests at the expense of the global community and the well-being of future generations. According to this view, given their increasing interdependence, states must not hide behind the notion of state

sovereignty to destroy their own environment or the environment of their neighbours without legal repercussions.[133]

6.2.2. A Case for Expecting the Actual Restoration of the Environment

There is a case for requiring affected states to use the proceeds of compensation for the purpose of actually restoring the natural environment. In the Certain Activities Case, Judge Cançado Trindade stated that 'any compensation awarded for environmental damage is to be used for restoration', with restitution being primarily aimed at restoring the affected environment.[134]

This requirement is justified by the need to achieve restorative justice, by undoing the original harm.[135] In his view, the sole focus on financial compensation is insufficient to address this type of loss. Instead, the intrinsic value of living beings (their "right to live") requires restoration through reparation in all its forms, with particular emphasis placed on restitution.[136] Finally, the compensation award partly referred to restoration costs. As a result, Judge Trindade suggested that Costa Rica was expected to use the proceeds 'to plant trees and other plants, seeking to restore biodiversity, and increase the future provision of such services…'.[137]

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[133] Duncan French, 'Reappraisal of Sovereignty in the Light of Global Environmental Concerns' (2001) 21(3) *Legal Studies* 376, 399.
[134] *Certain Activities,* Compensation Judgment (n 27) Separate Opinion of Judge Cançado Trindade, Para 54.
[135] Ibid, Para 57.
[136] Ibid, Para 70 and 74.
[137] Ibid, 79.

As stated by Judge Cançado Trindade, in cases where it is not possible to award *restitutio in integrum*, the proceeds of compensation should be used for the actual restoration and improvement of the environment. Such restoration benefits the overall condition of the environment. This reveals a latent interest shared by all states in the actual restoration of environmental damage (as all are affected by the overall deterioration of the global environment). This collective interest is evidenced by the numerous treaties adopted to ensure conservation. Requiring the use of compensation awards for the *actual reinstatement of the environment* would also align with the trends previously discussed, particularly those reflected in liability agreements[138] and in the UNCC practice.[139]

a) Common Concern

The notion of a common concern for the environment embodies a concept of environmental responsibility whose implications are not precisely defined. The idea holds that sovereignty is neither absolute nor unlimited, as states bear global responsibilities to protect at least some aspects of their domestic environment. This is particularly true in relation to global issues, such as biological diversity, the ozone layer, and climate change.[140] There is an argument that the principle of common concern extends to the protection of each state's domestic environment, even in

[138] Refer to Chapter 5.
[139] Refer to Chapter 6, 5.2.
[140] Birnie *et al* (n 136) 130; also, Daniel Bodansky *et al, International Climate Change Law* (OUP 2017), 51-52.

the absence of direct transboundary effects;[141] at least in principle, every instance of harm to the natural environment may have some impact on biological diversity and climate stability. As a result, every state is expected to prevent the further deterioration of global natural systems. The ILC's Draft Principles on the Allocation of Loss embodied these values among its purposes, aiming to *'preserve and protect the environment per se as a common resource of the community'.*[142]

b) Intergenerational Equity

Another argument supporting the expectation of environmental restoration (actual reinstatement) lies in the principle of intergenerational equity, which imposes upon states the obligation to protect the environment. It dictates that States are responsible 'to each other to ensure that the planet is well cared for'.[143] In the Stockholm Declaration, states pledged 'to protect and improve the environment' to ensure the well-being of future generations.[144] The principle lies at the core of the

[141] On the common concern for the environment, refer to Birnie *et al* (n 136) 128. This common concern for environmental reparation was later recognised in the ILC, Principles on the Allocation of Loss 2006. See Principles on the Allocation of Loss (n 78) Principle 3, Comm 6.
[142] Principles on The Allocation of Loss (n 78) Principle 3, Comm 1.
[143] Edith B Weiss, 'In Fairness to Future Generations' (1990) 32(3) *Environment* 7, 9; also, Edith B Weiss and United Nations University, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Transnational 1989), 73.
[144] UNGA, 'The Stockholm Declaration on the Human Environment' UN Doc UN Doc. A/CONF. 48/14, at 2 and Corr 1 (1972), Principle 1; also, UNGA, 'Rio Declaration on Environment and Development' Res 151/26 (16 August 1992) UN Doc A/CONF.151/26(I) (Rio Declaration), Principle 3.

concept of sustainable development and has been expressly recognised in international adjudication.[145]

In his separate opinion in *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*[146] Judge Cançado Trindade emphasised the relevance of inter-generational equity in the face of the environment's vulnerability.[147] Similarly, in *Whaling in the Antarctic (Australia v. Japan; New Zealand intervening)*,[148] he noted the increasing prominence of intergenerational equity as a principle in international law.[149] To scholars, the principle is evolving towards becoming justiciable.[150] These developments imply that, in the interest of future generations, humankind must do its best to mitigate the impact of its activities. This includes implementing, where appropriate, the restoration of degraded areas of natural environment.

c) A Global Trusteeship

Commentators have long alluded to a concept of global trusteeship for the care and protection of the global environment.[151] Environmentalists have advanced this idea since the 1960s, advocating for international

[145] *Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France) Case*, (1995) ICJ Rep 288, 341.
[146] *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* Judgment (2010) ICJ Rep 14.
[147] Ibid, Separate Opinion of Judge Cançado Trindade, Para 121-122.
[148] *Whaling in the Antarctic (Australia v. Japan; New Zealand intervening),* Judgment (2014) ICJ Rep 226.
[149] Ibid, Separate Opinion of Judge Cançado Trindade, Para 47.
[150] Claire Molinari, 'From Right to Development to Intergenerational Equity' in Jorge E Viñuales (ed) *The Rio Declaration on Environment and Development: A Commentary* (OUP 2015), 393.
[151] Peter H Sand, 'Principle 27: Cooperation in a Spirit of Global Partnership' in Jorge E Viñuales (ed) *The Rio Declaration on Environment and Development: A Commentary* (OUP 2015), 1357.

cooperation for the protection of natural heritage.[152] In 1997, the UN Secretary-General proposed that the UN Trusteeship Council be reconstituted as a forum to exercise the 'collective trusteeship for the integrity of the global environment', encompassing the atmosphere.[153]

According to Payne, the principle of agency or trusteeship guided the UNCC Governing Council to place claimants[154] in the position of agents acting in the interest of the international community.[155] In this sense, Mushkat refers to a 'planetary trust' jointly managed by states, with the purpose of 'conserving, protecting and augmenting the object of the trust'.[156] Scholars have noted that, while the notion of environmental trusteeship remains hortatory, there is increasing evidence of its gradual emergence as a new concept in international law.[157]

d) Ethical Grounds

Finally, from an ethical standpoint, the requirement for the actual restoration of the environment embodies the recognition of the environment's intrinsic value, with claimants acting in the environment's

[152] WWF, 'Russell E. Train and the Origins of Global Environmental Cooperation' available at <https://www.worldwildlife.org/stories/russell-e-train-and-the-origins-of-global-environmental-cooperation> accessed 2 Sept 2025.
[153] UNGA, 'Renewing the United Nations: A Programme for Reform' UN Doc A/51/950 (14 July 1997), Para 85.
[154] Payne, 'Oversight…' (n 81) 112-129; On trusteeships, see Duncan Hall, *Mandates, Dependencies and Trusteeships* (Kraus 1972), Ch 1.
[155] David D Caron, 'The Place of the Environment in International Tribunals' in Jay E Austin and Carl E Bruch (eds), *The Environmental Consequences of War* (CUP 2000), 256-258.
[156] Roda Mushkat, *International Environmental Law and Asian Values Legal Norms and Cultural Influences*. (UBC 2004), 18.
[157] Luan Low and David Hodgkinson, 'Compensation for Wartime Environmental Damage: Challenges to International Law after the Gulf War' (1995) 35 *VJIL* 405, 465-466.

behalf.[158] Natural systems are effectively treated *as victims*, for whose benefit awards are intended to promote recovery and regeneration.[159] Moreover, this approach reduces the relevance of the principle that prohibits victims from attaining financial gain from compensation,[160] thus allowing awards to exceed the total market value of lost resources. As suggested by Judge Cançado Trindade, the precise financial valuation of each particular loss then becomes a secondary consideration, with the focus shifting towards the shared benefit of the environment and the collective good of humankind.[161]

6.2.3. Valuation of Environmental Services

As discussed, despite some controversy, the ICJ has confirmed its jurisprudence in favour of awarding compensation for environmental damage through the use of global assessments that lead to lump sums.[162] Until states agree upon an alternative methodology for valuation, the use of overall assessments is likely to remain the benchmark for future cases of reparation of environmental damage. Therefore, this approach warrants a critical examination.[163] When one considers the intangible

[158] David D Caron, 'Finding Out What the Oceans Claim: The 1991 Gulf War, the Marine Environment, and the United Nations Compensation Commission' in David Caron and H N Scheiber (eds), *Bringing New Law to Ocean Waters* (M Nijhoff 2004), 413-414. Joyner and Dettling call for a 'serious reconsideration of territorial jurisdiction' concerning environmental interests. See Christopher C Joyner and John C Dettling, 'Bridging the Cultural Chasm: Cultural Relativism and the Future of International Law' (1990) 20 *CWILJ* 275, 292-293.
[159] Caron, 'Finding…' (n 158) 394.
[160] Principles on the Allocation of Loss (n 78) Principle 3, Comm 17.
[161] Caron, 'The Place of…' (n 167) 258-259.
[162] Refer to Chapter 7, Section 4.
[163] Manoel J Ventura, 'Armed Activities on the Territory of the Congo' (2023) 62 *ILM* 399, 401

character of environmental assets and values, this approach appears to offer significant potential for future developments in the field, providing courts flexibility to consider the special circumstances of each case.[164]

As observed by Judge Cançado Trindade, environmental reparation should focus on *restitutio in integrum.* This is in line with the jurisprudence of the ICJ which, in the *Certain Activities* case, awarded a lump sum that included the restoration costs requested by Costa Rica. An assessment of the *Certain Activities* case indicates that the global sum was awarded *in addition* to the funds allocated for the complete restoration of the environment.[165] The previous sub-section presented arguments supporting a claim for the actual use of this part of the award for the re-establishment of the natural environment. That said, the overall sum granted as compensation of environmental damage may also be used to redress for intangible losses, such as those of intrinsic values and ecosystem services.

In this sense, the crystallisation of the practice of awarding lump sums in international law may offer advantages in addressing compensation, particularly considering the environment's intangible aspects such as intrinsic values. As discussed in Chapters 2 and 4, there are significant challenges in establishing the monetary price of the environment. With all its complex interdependencies and the ethical dilemma inherent to putting a price on life, species, and their interactions, the financial assessment of such values represents a defying task. By using the global-sum approach,

[164] Alessandro Bufalini, 'Remarks on the role of equity in determining war reparations before the International Court of Justice' (2022) 95 *QIL* 25, 41.
[165] Refer to Chapter 7, Section 4.2.

the Court is relieved of the constraint of capping compensation at the market value of the lost environmental assets. In other words, global-sum assessments allow the Court to reason more freely in awarding compensation for losses of intrinsic value.

In summary, the primary rule should be to award compensation based on the cost of restoring the environment, where feasible. In addition, global sums should address compensation for loses of intrinsic values or where the damage is beyond recovery. To be effective in addressing the full range of environmental losses, the global sum approach should be dissociated from purely anthropocentric and utilitarian conceptions, such as market prices per unit of loss. This is consistent with the recognition of nature's intrinsic value in international law. The approach also offers tribunals greater flexibility in addressing instances of irreparable environmental damage. This, combined with the claim for the actual use of funds for the enhancement of the environment, allows these funds to be channelled towards the restoration in the vicinity of the damage, employing an ecosystem approach that enables the environment to recover a condition ecologically comparable to that which existed prior to the damage.

Nonetheless, there is scope for improvement in the application of global sums. Courts should address the criticisms directed at the overall approach by adopting more transparent methodologies for calculating amounts, even where they rely on equitable arguments. In addition, they should be clear whether the sums address losses of nature's values, including intrinsic values, so as to prevent insufficient compensation. This

would result in assessments that are not bound to anthropocentric-utilitarian notions such as the idea of market prices. Finally, there should be clear guidelines to ensure that the proceeds of compensation are used for restoration projects or for the creation of wilderness areas in the vicinity of the damage, thus enhancing the state of the regional environment.

With these adjustments, the use of overall assessments to award global sums to compensate for environmental damage would align the international jurisprudence with ethical foundations of international environmental law. This would result in awards that satisfy the interests of claimants whilst addressing all aspects of environmental damage and without disregarding the common concern for the environment and with the principle of inter-generational ethics.

6.3. Regulating Environmental Reparation

This thesis' initial chapters have argued for the need to conserve the environment and natural resources in order to maintain the balance of Earth's natural systems. The current environmental crisis requires urgent action by states to avert risks to the very survival of our species. This thesis has argued that transboundary environmental damage constitutes a relevant fraction of the anthropogenic pressure on our planet's natural systems. Therefore, this thesis calls for a more stringent regulation of the prevention and reparation of this sort of damage as a manner to reduce our footprint on the global environment.

This discussion has demonstrated that recent developments suggest the responsibility of states for transboundary pure environmental damage and their obligation to provide material remediation sufficient to offset the entirety of the losses. At this stage, the codification and progressive development of the rules governing the reparation of such damage would provide the international community with clarity certainty regarding the extent of their environmental obligations and the consequences of their breach. The clear delimitation of these obligations and of the consequences for their breach would likely impact the regulation of hazardous activities in domestic law, thereby enhancing the efficacy of the preventive principle. In addition, it would make it easier to settle the reparation of future damages. This section will examine three possible forums for these codification efforts.

6.3.1. The International Law Commission

When assessing the most suitable forums for the codification and development of these norms, the ILC emerges as the most evident candidate, given its decades-long work on state responsibility, prevention, and liability for transboundary damage.[166] In addition, the outcomes of its work tend to be authoritative, frequently guiding international tribunals, particularly the ICJ.[167] Therefore, they have the potential to play a

[166] Refer to Chapter 4 Section 2.1.
[167] Marija Đorđeska, The Process of International Law-Making: The Relationship between the International Court of Justice and the International Law Commission' (2015) 15(1) *ICLR* 7, 7.

significant role in shaping state practice,[168] contributing to the crystallization of norms, and potentially the formation of new customary rules.[169]

However, electing the ILC as the forum of choice would not be without disadvantages. Some scholars have argued that the Commission has faced several challenges since its inception.[170] Others have further noted the regional imbalances in its composition, criticising an inequitable distribution of its members among nations.[171] Moreover, being composed primarily of lawyers who lack specialised expertise in environmental science and policy, it may not be the most appropriate forum to address the complexity of this issue.[172]

In addition, the ILC's dual objective, namely, the codification and progressive development of international law,[173] creates inherent tensions that may undermine the effectiveness of its output. The ILC Statute defines "codification" as the 'precise formulation and systematization' of international law of which there is extensive evidence, while "progressive development" refers to the preparation of draft conventions on subjects not yet regulated.[174] Over the past decades, the

[168] Fernando L Bordin, 'Reflections of Customary International Law: The Authority of Codification Conventions and ILC Draft Articles in International Law' (2014) 63(3) *ICLQ* 535, 535-536.
[169] Ibid, 566.
[170] Kery van Douwen, 'Seventeen men at Lake Success: In search of the International Law Commission' (2024) 37 *LJIL* 557, 558-559.
[171] Christian Tomuschat, 'The International Law Commission: An Outdated Institution' (2006) 49 *GYIL* 77, 79.
[172] Ibid, 81.
[173] UNGA, 'Statute of the International Law Commission Resolution' Res 174(II) (1947), Article 1.
[174] Ibid, Article 15.

ILC has gradually shifted its focus from progressive development towards the codification of existing rules of international law.[175]

In practice, however, this distinction has often proved to be blurred.[176] Scholars disagree on the notion of codification.[177] Some argue that it constitutes a purely scientific endeavour for scholars whilst other believe that, given its political dimension, it necessarily involves law-creation, which make it a task more appropriately undertaken by government officials.[178] Similarly, some argue that "progressive development" should be reserved for negotiation among states rather than a task conducted by ILC experts.[179] Scholars have referred to the "irreconcilable tensions" between the two roles of codification and progressive development.[180] While it is not always evident to what extent each aspect of the ILC's work represents codification or progressive development,[181] this ambiguity results in a latent tension between the ILC's tasks as both codifier and legislator.[182]

The politically sensitive character of environmental matters also makes the ILC a less-than-optimal choice. Views on environmental problems,

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[175] Wouter Werner, 'The Making of Lawmaking' in Nico Krish and Elzi Yildiz (eds), *The Many Paths to Change in International Law* (OUP 2023), 132.
[176] Ibid, 133; also, UN, 'United Nations Documents Concerning Development and Codification of International Law' UN Doc A/AC.10/SR.3 (1947), 6.
[177] For a historical appraisal of the efforts on the codification of international law, refer to Ramaa P Dhokalia, *The Codification of Public International Law* (MUP 1970), 37–137. For the different views on codification, refer to 39-76.
[178] Yifeng Chen, 'Between Codification and Legislation: a Role for the International Law Commission as an Autonomous Law-Maker' in --, *Seventy Years of the International Law Commission* (Brill 2020), 245-246.
[179] van Douwen (n 170) 568-569.
[180] Chen (n 178) 238 and 246-248.
[181] *Ibid*, 248; also, Nikolaos Voulgaris, 'The International Law Commission and Politics: Taking the Science Out of International Law's Progressive Development' (2022) 33(3) *EJIL* 761, 762-769.
[182] Chen(n 178) 248.

and on how they should be addressed, differ significantly across states. For instance, developing nations have traditionally regarded conservation efforts with suspicion given the constraints they may impose on their development goals.[183] Some of these issues are reflected in the principle of common but differentiated responsibilities, which affords more favourable treatment to some nations in recognition of their particular circumstances and needs. These considerations highlight the inherently political nature of international environmental law, rendering it less than ideal to be developed exclusively by lawyers.[184]

Scholars have pointed out that the lack of separation between codification and progressive development in the ILC's work may undermine the legitimacy of some of its output. In their view, the blurring between its functions results in Commission discretely engaging in lawmaking without either mandate or legitimacy to do so.[185] This could lead to poor compliance with, and reduced effectiveness of, a set of articles if it were to be proposed by the Commission.[186] Finally, a mandate to regulate transboundary environmental damage would likely take several years to complete,[187] making it a less than ideal choice given the urgent action needed to halt the decline of the Earth's natural systems.

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[183] E Thomas Sullivan, 'The Stockholm Conference: A Step toward Global Environmental Cooperation and Involvement' (1972) 6 *ILR* 267, 270-272.
[184] Peter H Sand, 'The Evolution of International Environmental Law' in Bodansky et al (eds), *The Oxford Handbook of International Environmental Law* (OUP 2007), 40.
[185] Voulgaris (n 181) 764-765.
[186] Alan Boyle and Christine Chinkin, 'Multilateral Law-Making: Diplomatic Processes' in Alan Boyle and Christine Chinkin (eds), *The Making of International Law* (OUP 2007), 99.
[187] For example, its mandate on State Responsibility, took several decades to be completed. Refer to Chapter 4, Section 2.1.

6.3.2. The CBD

An alternative forum for this work would be the Conferences of the Parties (CoP) to the CBD. Given its near-universal adoption and ratification,[188] the Convention possesses unquestionable legitimacy to negotiate related environmental matters, particularly given its express mandate to develop agreements on liability for damage to biodiversity.[189] These negotiations have already proved fruitful, culminating in the Nagoya-Kuala Lumpur Supplementary Protocol. As discussed, this instrument provides one of the most comprehensive reparation models for environmental damage in international law.[190] The regular meetings of the parties enhance the perception of the legitimacy of its output, thus increasing the likelihood of state compliance with its provisions.[191]

On the negative side, the CBD's focus on biodiversity represents a potential limitation arising from its narrow scope,[192] potentially excluding the regulation of abiotic components of transboundary damage. In addition, the absence of the US as a party to the Convention could undermine its overall efficacy.[193] It is also worth noting that the CBD's enforcement and compliance mechanisms have been regarded as

[188] CBD, List of Parties https://www.cbd.int/information/parties.shtml Accessed 9 January 2025.
[189] Refer to Chapter 7, sections 2 and 3.
[190] Refer to Chapter 5, Section 3.6 and Chapter 7, Section 3.
[191] Boyle and Chinkin, 'Multilateral Law-Making: Diplomatic Processes' in Alan Boyle and Christine Chinkin (eds), *The Making of International Law* (OUP 2007), 100.
[192] Convention on Biological Diversity (adopted 5 June 1992, into force 29 December 1993) 1760 UNTS 69 (CBD), Article 1.
[193] CBD, List of Parties, available on <https://www.cbd.int/information/parties.shtml>, accessed 7 August 2025.

insufficient to ensure compliance with its norms, which might diminish the agreement's efficacy.[194]

6.3.3. Diplomatic Conference

Another possibility would be the convening of a diplomatic conference dedicated to the negotiation of an agreement on transboundary environmental damage and its consequences. This approach mirrors the one used in 1992, when the UNCED (Rio Conference) facilitated the negotiation of significant international agreements, including the CBD.[195]

As has happened in the past, such a conference would typically be preceded by studies conducted within the UN system, followed by submission to the UN General Assembly.[196] This pathway would enable the participation not only of states but also of affected communities, experts, and NGOs, therefore potentially enhancing the legitimacy of the negotiating process. A possible disadvantage of this option lies in the unpredictability of its outcomes. As happened in the Rio Conference, negotiations may fail to achieve the anticipated results, leading to a less ambitious agreement, if any at all.[197]

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[194] Niak S Koh, 'Mind the Compliance Gap: How Insights from International Human Rights Mechanisms Can Help to Implement the Convention on Biological Diversity' (2022) 11(1) *TEL* 39, 45-48.
[195] Boyle and Chinkin, 'Multilateral…' (n 191) 142.
[196] Ibid, 146.
[197] Ibid, 147.

Each of the approaches outlined above carries its own set of advantages and disadvantages. While a diplomatic conference offers the potential to reach the most comprehensive agreement, it remains uncertain whether states are presently willing to engage in such negotiations, at least until further studies show the gravity of our environmental crisis.

Given the evidence produced throughout this thesis, the CBD seems to emerge as a suitable forum for the negotiation of the regulation of this subject. The Convention's early commitment to recognising and protecting nature's intrinsic value makes it well placed to address such losses. Moreover, the Convention's focus on protecting the diversity of life forms (the primary marker of intrinsic value) further suggests it as the best suited forum for debate. In addition, the CBD among the pioneering agreements to recognise nature's intrinsic value. As a result, an agreement reached within its framework would be less likely to overlook this important aspect of the environment. Moreover, the CBD has already shown its capacity to develop a successful liability agreement, when it led to the adoption of the most comprehensive reparation agreement in international law: the Nagoya-Kuala Lumpur Protocol.

On a note of caution, such a protocol would need to incorporate mechanisms to address the CBD's enforcement limitations, as discussed above. If adequately designed, this approach would enable the agreement on transboundary environmental damage which would match the magnitude of our contemporary environmental issues.

6.4. Opportunities for Further Research

This research has demonstrated the responsibility of states for the compensation of environmental damage, including for harm to environmental values. Given that the use of overall assessments, with the award of lump sums, appears to have become established within the ICJ´s jurisprudence, there is an opportunity to critically examine the use of equitable principles in the calculation of compensation. Such research could contribute to reaching an objective and coherent set of principles and guidelines to assist courts in the award of lump sums in compensation for pure environmental damage and losses of environmental values.

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