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Investigating the relationship between adaptation in the
UNFCCC and reparation under customary international
law.

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Summary

The concept of adaptation to the adverse effects of climate change is relatively recent in international environmental law. Adaptation is not defined in the UNFCCC. This paper attempts to address adaptation in the UNFCCC from the perspective of reparation under customary international law. It investigates what the concepts of adaptation and reparation have in common. Could adaptation in the UNFCCC be seen as a potential extension of the notion of reparation under customary law? This paper investigates the relationship between adaptation in the UNFCCC and reparation as of the ILC draft articles on Responsibility of States for internationally wrongful acts. It does so by conceptualizing adaptation through international environmental law principles, the GEF funding policy and the UNFCCC. The paper analyses reparation as of the ILC draft articles by considering cases, awards, and scholarly opinion. The objective and function of adaptation and reparation are analysed collectively in light of the preceding findings. The concept of adaptation and reparation under customary international law are found to have similar objectives. Furthermore, developments under international environmental law, such as the emergence of a preventive, rather than simply reparative obligation, are found to reconcile adaptation and reparation in certain aspects. However, state's policies on funding for adaptation to the adverse effects of climate change, as seen through the GEF funding policy and UNFCCC, indicate that there is still not enough state practice on funding for adaptation to argue that there is international consensus on the legal implications of adaptation. In light of this it is clear that today funding for adaptation is far from an obligation under customary international law.

Sammanfattning

Begreppet adaptation to the adverse effects of climate change är relativt nytt i internationell miljö rätt. Begreppet adaptation är inte definierat i UNFCCC. Den här uppsatsen analyserar adaptation i ljuset av begreppet reparation i internationell sedvanerätt. Uppsatsen undersöker vad begreppen adaptation och reparation har gemensamt. Kan adaptation i UNFCCC ses som en möjlig utveckling eller förlängning av reparation i internationell sedvanerätt? Den här uppsatsen undersöker relationen mellan adaptation i UNFCCC och reparation enligt ILCs draft articles on Responsibility of States for Internationally wrongful acts. Undersökningen görs genom att analysera begreppet adaptation med hjälp av internationella miljö rättsliga principer, GEFs riktlinjer för finansiering och UNFCCC. Uppsatsen undersöker också vad reparation innebär genom att beakta internationella rättsfall, avgöranden, skiljedomar och doktrin. Syftet och funktionen av begreppet reparation och adaptation analyseras gemensamt i beaktande av de diskussioner som förts i tidigare delare av uppsatsen. Enligt den slutliga analysen har begreppen adaptation och reparation liknande syften. Vidare gör den utveckling av internationell miljö rätt, som fokuserar på preventiva åtgärder istället för enbart reparativa skyldigheter, att begreppen adaptation och reparation är förenliga i vissa avseenden.

Dock visar staters agerande i frågor som rör adaptation och ovilja att finansiera adaptation att det varken finns internationell konsensus, opinio juris eller det enhetliga agerande som krävs för att internationell sedvanerätt skall finnas. Det är därmed tydligt att finansiera adaptation i idag är långt ifrån en skyldighet under internationell sedvanerätt.

Abbreviations

CDM Clean development mechanism

COP Conference of the Parties for the UNFCCC

GEF Global Environment Facility

ICJ International court of Justice

IEA International Energy Agency

ILC International Law Commission

IPCC Intergovernmental Panel on Climate Change

KP Kyoto Protocol

LDCF Least Developed Countries Fund

NAPA National Adaptation Programmes of Action

OECD Organisation for Economic cooperation and Development

PCIJ Permanent Court Of International Justice

SCCF Special Climate Change Fund

UNFCCC United Nations Framework Convention on Climate Change

1 Introduction

1.1 Background

Warming of the climate system is, according to the Intergovernmental Panel on Climate Change (IPCC), unequivocal and evident from widespread melting of snow and ice, ocean level rise and increase of global average air temperature.¹ Furthermore, there is very high confidence that the net effect of anthropogenic activities have resulted in this warming.² There is also high agreement and much evidence that with today's mitigation policies greenhouse gas emissions will continue to increase over the next few decades.³

What kind of effects might be caused by climate change? The IPCC has synthesised studies that have investigated the projected impacts of climate change. According to this report, by 2020 between 75 and 250 million people in Africa will be exposed to increased water stress as a result of climate change. In Asia, by 2050, especially populated mega delta areas will be at risk of being flooded from sea and floods. In Latin America, water availability for human consumption will be affected. In Europe and North America, health risks will be increased due to more frequent heat waves.⁴ These are only very few examples of scenarios of impacts of climate change.

There are two main ways of responding to climate change, mitigation and adaptation. Mitigating climate change means abating the emission of greenhouse gases through measures such as cutting down the use of fossil fuel or promoting energy efficiency. Adaptation according to the IPCC, takes place 'through adjustments to reduce vulnerability or enhance resilience in response to observed or expected changes in climate and associated extreme weather events.'⁵ Practically adaptation includes such measures as investing in coastal infrastructure protection to reduce

¹ IPCC fourth synthesis report observed changes in climate and their effects
http://www.ipcc.ch/publications_and_data/ar4/syr/en/spms1.html.

² IPCC fourth synthesis report, causes of change
http://www.ipcc.ch/publications_and_data/ar4/syr/en/spms2.html.

³ IPCC fourth synthesis report, projected climate change and its impacts.
http://www.ipcc.ch/publications_and_data/ar4/syr/en/spms3.html.

⁴ IPCC fourth synthesis report, projected climate change and its impacts.
http://www.ipcc.ch/publications_and_data/ar4/syr/en/spms3.html.

⁵ IPCC Fourth Assessment report, Working group two: Impacts, Adaptation and Vulnerability, concepts and methods, available at
http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch17s17-1.html.

vulnerability to sea level rise.⁶ According to the IPCC, there are barriers limits and cost in regard to adaptation which are not yet ‘fully understood.’⁷

An increase in global temperature by at least 0.1 degree Celsius per decade is expected ‘even if the concentrations of all greenhouse gases and aerosols had been kept constant at year 2000 levels’.⁸ Adverse effects of climate change are upon the world irrespective of what mitigation actions states agree to undertake in a post 2012 agreement. Adaptation is therefore recognized as a crucial tool in fighting climate change because simply limiting emission levels will not combat the adverse affects of climate change.⁹ The importance of adaptation as a way of tackling adverse effects of climate change was recognized through the adoption of the Cancun adaptation framework by the UNFCCC parties in 2010.¹⁰

Parallel to the increasing recognition of the importance of adaptation, greenhouse gas emissions from historically smaller emitters are on the rise. The traditional major emitters, the OECD countries in Annex One, are emitting less than Annex Two parties, economies in transission, and Non Annex One countries, the remaining country parties in the UNFCCC. In the recent International Energy Agency report *CO2 emissions from fuel combustion*, it is estimated that CO2 emissions from non Annex One countries grew by 6% between 2007 and 2008. At the same time CO2 emissions from Annex One countries decreased by 2 %, ‘causing the aggregated emissions of developing countries to overtake those of developed countries.’¹¹

Climate vulnerabilities are unevenly distributed around the globe. Africa, for example, is recognised as one of the most vulnerable continents to climate change.¹²

⁶ IPCC Fourth Assessment report, Working group two: Impacts, Adaptation and Vulnerability, assessment of current adaptation practices available at http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch17s17-2.html.

⁷ IPCC fourth synthesis report, adaptation and mitigation options http://www.ipcc.ch/publications_and_data/ar4/syr/en/spms4.html.

⁸ IPCC Fourth assessment report: climate change 2007, Working group 1, *The physical science basis* available at http://www.ipcc.ch/publications_and_data/ar4/wg1/en/spmsspm-projections-of.html.

⁹ IPCC third assessment report: Climate change 2001, Working group 2: *Impacts, Adaptation and Vulnerability*, preface, available at http://www.grida.no/publications/other/ipcc_tar/.

¹⁰ Decision 1 /COP-16 paragraph 11 available at <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=4>.

¹¹ International energy agency IEA statistics, *CO2 emissions from fuel combustion highlights*, 2010 edition, p.7, available at <http://www.iea.org/co2highlights/co2highlights.pdf>.

¹² IPCC Fourth assessment report: climate change 2007 Working group 2, *Impacts adaptation and vulnerability, executive summary*, available at http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch9s9-es.html.

What legal avenues exist for victims of climate change to seek remedy for climate change damage? According to article 3 in the UNFCCC Parties should protect the climate system in accordance with their common but differentiated responsibilities and respective capabilities. An obligation to make reparation for climate change damage under international customary law cannot be established. The debate concerning the form of potential reparation for climate change damage has thus far centred on compensation.¹³ However, the irreversible nature of climate change damage challenges the established forms of reparation, such as compensation, as investigated by Voigt and Verheyen. Compensation alone does not suffice as an instrument to account for the irreversible non financially assessable harm that will occur as a result of climate change.

The administration of the adaptation funding scheme under the UNFCCC is currently mandated to the Global Environment facility (GEF). Funding for adaptation according the GEF guidelines is provided for *incremental* and *additional* cost resulting from anthropogenic climate change. As is discussed in the second section of this paper, lawyers suggest that actual adaptation needs are not adequately covered under the current adaptation funding scheme.

1.2 Objective and research questions

In light of the principle of common but differentiated responsibility, the shortcomings of the GEF funding policy in addressing adaptation needs and the obstacles for compensation as a tool to address climate change damage, the concept of adaptation needs to be investigated in relation to the established reparative obligation under international customary law. The objective of this paper is to investigate the relationship between the concept of adaptation and the concept of reparation under customary law according to the ILC. How does the concept of reparation relate to the concept of adaptation? In investigating this question, several other questions arise of equal importance. One of these questions is: What do the concept of adaptation and the concept of reparation entail legally?

This paper investigates what is meant by the concept of adaptation in the UNFCCC and how it is applied. Adaptation is not defined in the UNFCCC so as to understand the practical meaning and extent of adaptation I investigate the international environmental law context in which adaptation is applied practically. The paper therefore investigates what guidance key environmental principles and principles within the UNFCCC can provide. The extent to which the GEF funding scheme addresses adaptation needs is also investigated.

¹³ For example, Voigt and Verheyens articles and dissertations used in this paper have focused on compensation.

The paper continues by researching the concept of reparation with particular reference to the International Law Commissions (ILC) draft articles on responsibility of States for internationally wrongful acts. The objective and function of reparation in the ILC draft articles are investigated by considering cases and awards. The extent of reparation in relation to environmental damage is also investigated. The difficulties of awarding compensation as reparation for climate change damage are discussed.

Finally, what do the concept reparation and adaptation have in common? What sets these two concepts apart? The concepts of reparation and adaptation are compared. Could adaptation be seen as an extension or form of reparation? I investigate what factors reconcile adaptation as an extension of reparation, and what factors resist such a conclusion.

1.3 Structure

This paper is divided into five sections. Section one is introductory. The following three sections are both descriptive and analytical. Section two focuses on key environmental law principles and what their relevance is for the interpretation of the concept of adaptation both under the UNFCCC and under international customary law. The third section focuses on how and in what ways adaptation in the UNFCCC is applied. In this connection the Global Environment Facility (GEF) funding policy is analyzed. In the fourth section of this paper the objective, function and extent of reparation according to the ILC draft articles are discussed. In the fifth section of this paper the preceding investigations are analyzed collectively.

1.4 Theory and method

This paper conceptualizes adaptation through international environmental law principles, the UNFCCC and the GEF funding policy. It investigates what reparation entails as of the ILC draft articles by considering cases, awards and scholarly opinion. The findings of these investigations are analyzed so as to investigate the relationship between reparation according to the ILC draft articles and adaptation in the UNFCCC.

The sources used in the second section are both primary and secondary. The UNFCCC is used as a point of departure but articles, dissertations and court cases are also used. The material in the third section of the paper was difficult to find. The GEF funding guidelines have at times been difficult to understand and get an overview of. Email correspondence with the GEF was necessary at one point. Because of the difficulty of navigating in the vast material on the GEF funding guidelines, secondary sources, in the form of articles have been of help. I have tried to avoid using too many articles. However, the accuracy of the factual content in the articles has been verifiable. This paper does not aim at investigating the GEF funding policy

as such. The GEF funding policy, mandated through the UNFCCC is only relevant to the extent that it can provide some guidance as to the legal conceptualization of the concept of adaptation. Analyzing the GEF funding policy in relation to adaptation itself could fill a thesis. Nevertheless, it has been necessary to understand the funding policy because the GEF is mandated through the UNFCCC.

The material in the fourth section of the paper range from International Court of Justice (ICJ) judgments to articles published in legal journals. I have tried to begin my investigation by first discussing the primary sources and consider the secondary sources only subsequently.

1.5 Delimitations

According to the ICJ statute, there are four sources of international law.¹⁴ Only the second source, international custom, will be considered in this paper. The first source, international conventions, will not be investigated in relation to reparation because treaties are only binding upon the parties and this paper does not aim at investigating state specific relationships. As to international custom, my analysis in this paper presupposes that the ILC's work in an authoritative indication of the world's view on state responsibility. Due to space constrains my investigation will therefore consider the ILC draft articles.

The objective of this paper is to investigate the relationship between the concept of adaptation and the concept of reparation under customary law according to the ILC. An obligation to make reparation for climate change damage under international customary law cannot yet be established. The main convention on climate change, the UNFCCC, does not stipulate that major emitters of greenhouse gas emissions are obligated to compensate smaller or non-emitters for climate change damage. This paper does not presuppose that such an obligation could be established either. Establishing state responsibility for climate change damage is an interesting and important study. Nevertheless, it falls outside the objective of this thesis. It is not within the scope of this paper to discuss if or on what grounds climate change damage could constitute an internationally wrongful act.

¹⁴ ICJ statute 38 (1) a. international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
b. international custom, as evidence of a general practice accepted as law;
d. subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.

2 Key environmental law principles

2.1 Introduction

Adaptation is, as discussed in the third section of this paper, not defined in the UNFCCC.¹⁵ Instead, the definition and scope of adaptation in the UNFCCC can be understood from the context in which it is applied. This section outlines the guiding principles in the UNFCCC and principles in environmental law which are relevant for climate change damage.¹⁶ The function of the guiding principles within the UNFCCC is to guide the implementation of the convention in reaching its objective through provisions.¹⁷ By considering the concept of adaptation in light of the guiding principles in the UNFCCC, the no harm principle and polluter pays principle, a basis is prepared for the subsequent investigation of the relationship between reparation and adaptation in the UNFCCC framework.

Principles within international law are ‘soft law’, instruments that do not stipulate legal obligations, but which play determining roles in interpreting and guiding legislation.¹⁸ Distinguishing between rules and principles in this sense allows the conclusion that ‘principles embody legal standards but the standards they contain are more general than commitments and do not specify particular actions unlike rules.’¹⁹ Because climate change law is still an emerging field in international law, environmental law principles can provide helpful guidance for the identification and development of concepts in climate change law.

One such environmental law principle is the concept of common concern. This concept can provide a starting point for understanding state responsibility in relation to international environmental law. According to this concept certain matters should be of concern to humanity and the International community as a whole.²⁰ Brunnee argues that the identification

¹⁵ See below in section 3, Adaptation in the UNFCCC framework, p.15.

¹⁶ Principles have been selected from the UNFCCC and with the help of Voigts investigation in the article *State responsibility for climate change damage* and Verheyens dissertation *Climate Change Damage and International law*.

¹⁷ Article 3 UNFCCC.

¹⁸ Sands, *Principles of International Environmental law*, p.234, 2nd edition Cambridge university press (2003).

¹⁹ Bodansky , *The United Nations Framework Convention on Climate Change; a Commentary*, 18 Yale journal of international law 451 at 501 (1993).

²⁰ Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.4, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

of a common concern can limit state sovereignty over natural resources 'if it creates or aggravates a common concern.'²¹ If a state through its usage of natural resources has aggravated a common concern, state responsibility for such action might arise because the state could be said to have violated an *erga omnes* obligation. The concept of common concern therefore arguably connects international state responsibility to international environmental law.²²

It is against the backdrop of the concept of common concern and the Stockholm declaration that the UNFCCC stipulates that certain principles shall be guiding within the framework.²³ This section focuses on two of the guiding principles, the principle of common but differentiated responsibility and the precautionary principle. In addition, the polluter pays principle and the no harm principle, which are not mentioned in the UNFCCC, are discussed.

2.2 The principle of common but differentiated responsibility

The principle of common but differentiated responsibility is incorporated into, among other environmental law instruments, the Rio declaration.²⁴ In the UNFCCC it is mentioned in article 3

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

The principle of common but differentiated responsibility could be said to consist of three elements; the first concerns common responsibility of all states, the second concerns the need to take account of differing circumstances, and the third stipulates solidarity between states.²⁵ The principle of common but differentiated responsibility therefore allocates responsibility according to the individual state's contribution to the creation

²¹ Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.14, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

²² Ibid.

²³ Preamble to UNFCCC states 'Recalling the pertinent provisions of the Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972.'

²⁴ Rio declaration article 7.

²⁵ Sands, *Principles of International environmental Law*, p.286, 2nd edition Cambridge University Press (2003).

of the particular environmental problem, and its ability to prevent, reduce and control the related threat.²⁶

In the context of climate change arguably the principle of common but differentiated responsibility allocates responsibility and burden sharing according to historical green house gas emissions. An example of this is manifested in article 4.3 in the UNFCCC

The developed country Parties and the economies in transition included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1.

Birnie and Boyle argue that article 4.3 illustrates the third element of the principle of common but differentiated responsibility; solidarity.²⁷ To ensure solidarity the developing countries efforts are dependent on assistance from the developed countries. By doing so 'it becomes irrelevant whether developed states have a legal duty to provide assistance' because the developing countries commitments are only fulfilled if the developed country parties meet their commitments.²⁸

As one of the guiding principles in the UNFCCC the principle of common but differentiated responsibility becomes relevant in respect to adaptation measures as well. To what extent however, is not clear. In this regard Dellink et al argue that as 'for adaptation, the primary burden sharing problem will be to allocate funding responsibilities to richer countries to fund adaptation efforts in poorer countries.'²⁹

However, the principle of common but differentiated responsibility is merely a principle and not a rule of conduct under international customary law.³⁰ Considering the role of the principle of common but differentiated responsibility under international treaty is not within the objective of this paper. Although the principle is included in the UNFCCC it is still argued to be 'unclear', and therefore 'unhelpful' to include in environmental agreements.³¹

²⁶

Ibid.

²⁷

Birnie & Boyle & Redgwell, International law and the environment, p.135, 3rd edition, Oxford University Press (2009).

²⁸

Ibid.

²⁹

Dellink et al, *Common but Differentiated Responsibilities for adaptation financing: an assessment of the contributions of countries*, The Institute for environmental studies (IVM) working paper, p.3 (2009)

³⁰

Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.14, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

³¹

Ibid.

2.3 The precautionary principle

The precautionary principle is a guiding principle in the UNFCCC.³² The precautionary principle is mentioned in article 3.3

The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.

In the context of climate change damage, the precautionary principle might prove instrumental to assess at what point state liability arises. It is therefore argued that the ‘main effect of the principle is to lower the standard of proof of risk.’³³

If one effect of the precautionary principle in the context of climate change is to prompt preventive action in case of scientific uncertainty, inability to curb green house gas emissions cannot be excused with reference to inconclusive scientific results. In the cases of environmental irreversible harm, the preventive approach might play a significant role. The Gabcikovo Nagymaros case illustrates one such example in which an early form of precautionary principle was key.³⁴ In its judgment, the ICJ asserted that ‘vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage.’³⁵ Moreover ‘owing to new scientific insights and to a growing awareness of the risks for mankind - for present and future generations ... new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities but also when continuing with activities begun in the past.’³⁶

³² Defined as such in article 3.3 UNFCCC.

³³ Birnie & Boyle & Redgwell, *International law and the environment*, p.164, 3rd edition, Oxford University Press (2009).

³⁴ Sands, *Principles of International environmental Law*, p.275, 2nd edition Cambridge University Press (2003).

³⁵ International Court of Justice, *Case concerning the Gabcikovo Nagymaros Project*, p.146 (1997) available through <http://www.icj-cij.org/docket/files/92/7375.pdf>.

³⁶ International Court of Justice, *Case concerning the Gabcikovo Nagymaros Project*, p.146 (1997) available through <http://www.icj-cij.org/docket/files/92/7375.pdf>.

As is discussed in the analysis, the precautionary principle illustrates a trend in environmental law similar to the objective of adaptation; minimising inevitable consequences resulting from a harmful act.

2.4 The Polluter Pays Principle

The polluter pays principle is an economic principle originating in a series of recommendations first adopted by the OECD countries in 1972.³⁷ It is not mentioned in the UNFCCC. Its main function is to allocate the costs of pollution borne by public authorities. The principle provides that the responsibility of cleanup costs in case of environmental damage lie with the polluter. One interpretation of the principle states that victims of pollution have a right to certain acceptable state of environment.³⁸ In the event that the environment cannot be brought back to such an acceptable state, as is the case with climate change damage, it is argued that 'the polluter pays principle may be extended to include the principle of compensation.'³⁹ Such an application of the polluter pays principle would also draw upon other principles, such as the no harm principle.⁴⁰ Therefore, Dellink et al suggest, 'compensating victims for damages caused by climate change is one extension of the polluter pays principle with respect to adaptation costs.'⁴¹

However, the polluter pays principle is not recognized as a measure of responsibility between states in international law.⁴² This limitation is investigated further in the analysis.

³⁷ Recommendation no. 89 of the Council on Guiding principles concerning International Economic aspects of environmental policies, paragraph A section 4 "The principle to be used for allocating costs of pollution prevention and control measures to encourage rational use of scarce environmental resources and to avoid distortions in international trade and investment is the so-called Polluter-Pays Principle. This principle means that the polluter should bear the expenses of carrying out the above-mentioned measures decided by public authorities to ensure that the environment is in an acceptable state." Available at <http://www.ciesin.org/docs/008-574/008-574.html>.

³⁸ Dellink et al, *Common but Differentiated Responsibilities for adaptation financing: an assessment of the contributions of countries*, The Institute for environmental studies (IVM) working paper, p.5 (2009).

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Dellink et al, *Common but Differentiated Responsibilities for adaptation financing: an assessment of the contributions of countries*, The Institute for environmental studies (IVM) working paper, p.6 (2009).

⁴² Verheyen, *Climate change damage and International law*, p. 72, Martinus Nijhoff Publishers (2005).

Furthermore, the legal significance of the polluter pays principle is debated. Boyle argues that the wording of the polluter principle in the Rio declaration is not of such normative character to give rise to a legally binding obligation.⁴³ Furthermore, implementation of the polluter pays principle has often remained with national authorities resulting in civil liability influencing the application of the polluter pays principle.⁴⁴ Using civil liability to apply the polluter pays principle includes considerations such as negligence and foreseeability of harm.⁴⁵

Another problem with the application of the polluter pays principle is its failure to indicate on what grounds to identify polluters. In the case of a polluting oil tanker, a broad definition of this term would stipulate that the operator of the oil tanker is the polluter whereas a narrow definition would point to the cargo owner.⁴⁶ Due to this ambiguity, the polluter pays principle cannot 'be treated as a rigid rule of universal application.'⁴⁷ In the context of climate change damage, this ambiguity adds to the already existing difficulty of establishing causality. As is discussed in the third section of this paper, establishing specific causality for climate change damage is complex. If the polluter pays principle does not clearly identify who the polluter is, then establishing causality using the polluter pays principle cannot be accomplished by simply establishing causality between climate change damage and the emitter of green house gases. Therefore, the polluter pays principle might in the context of climate change damage merely lead to more complexities. Without further definition, Boyle argues that the polluter pays principle cannot supply further guidance to national and international liability.⁴⁸

2.5 The no harm principle

The no harm principle, also known as the no harm rule, is one of the cornerstones in international customary law.

The status of the no harm principle as part of international customary law has been confirmed in a number of cases before the ICJ, most recently in the advisory opinion of Nuclear Tests case. The Nuclear Test case illustrates how the no harm principle can provide a starting point when considering compensation for climate change damage. Australia claimed that France had violated the right of each state to be free of radioactive matter on her

⁴³ Boyle, *Polluter pays*, article in Max Planck Encyclopedia of Public International law, 2010 available at www.mpepil.com.

⁴⁴ Boyle, *Polluter pays*, article in Max Planck Encyclopedia of Public International law, 2010 available at www.mpepil.com.

⁴⁵ Boyle, *Polluter pays*, article in Max Planck Encyclopedia of Public International law, 2010 available at www.mpepil.com.

⁴⁶ Boyle, *Polluter pays*, article in Max Planck Encyclopedia of Public International law, 2010 available at www.mpepil.com.

⁴⁷ Boyle, *Polluter pays*, article in Max Planck Encyclopedia of Public International law, 2010 available at www.mpepil.com.

⁴⁸ Boyle, *Polluter pays*, article in Max Planck Encyclopedia of Public International law, paragraph 13 (2010) available at www.mpepil.com.

territory arising from the French nuclear test. Commentators suggest that the court sidestepped the real issue by simply concluding that a unilateral declaration from France (saying that the test would end) made any further judicial action from the court unnecessary.⁴⁹ The court stated in its judgement that

‘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.’⁵⁰

However, as Voigt points out, the no harm rule as customary rule ‘has the disadvantage of vagueness.’⁵¹ If the rule prohibits any kind of harm, the harmful activity itself is irrelevant; if the rule is only applicable to certain kinds of activities, harm itself is not prohibited.⁵² This means that harm itself may not be prohibited by the no harm rule. The exact scope of the no harm rule remains unclear. This concern was addressed by the ILC in draft articles on Prevention of Transboundary harm from Hazardous activities⁵³ The draft articles specifically apply ‘to activities not prohibited under international law’ but which involve a risk of causing significant transboundary harm.’⁵⁴

Nevertheless, the potential relevance of the no harm principle in the context of climate change damage is highlighted further in the Corfu Channel case. In the Corfu Channel case, British destroyers struck mines in the Corfu channel, part of Albanian territory. The UK requested the court to assess whether Albania was liable to pay compensation. The court held that the laying of the minefield could not have been accomplished without the knowledge of Albania, and therefore a duty to notify ships of the mines arose. The court based its conclusion on ‘every State’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States.’⁵⁵ Because it had failed in fulfilling this obligation, Albania

⁴⁹ Okidi, *Nuclear Tests case*, p.13, Judicial decisions on matters related to the environment, International decisions volume 1(1998) available at [http://www.unep.org/padeli/publications/Jud.dec.%20pre\(Int%20.pdf](http://www.unep.org/padeli/publications/Jud.dec.%20pre(Int%20.pdf).

⁵⁰ International court of Justice, *Nuclear weapons case*, report 241, paragraph 29 (1996) available at <http://www.icj-cij.org/docket/index.php?p1=3&p2=4&k=e1&p3=4&case=95>.

⁵¹ Voigt, *State responsibility for climate change damages*, p. 8, Nordic Journal of international law 77 (2008) 1-22.

⁵² Ibid.

⁵³ Ibid.

⁵⁴ ILC draft articles on Prevention of Transboundary Harm from Hazardous activities, article 1 ‘the present articles apply to activities not prohibited by international law which involve a risk of causing significant transboundary harm through their physical consequences.’

⁵⁵ International Court of Justice, Judgment in Corfu Channel Case, p.22 (1949).

had committed an internationally wrongful act.⁵⁶ The court particularly stressed that no effort had been made to alert the United Kingdom of the mines.

In the context of climate change damage, claims could be based on the lack of state control over activities within its jurisdiction. Therefore, the Corfu Channel Case provides an interesting platform from which to argue State responsibility arises from failure to regulate harmful industry.

As is outlined in the section on compensation in this paper, the direct applicability of the no harm principle in the context of climate change damage is restrained by a number of factors.

2.6 Discussion

The principle of common but differentiated responsibility and the precautionary principle discussed above are not easily applicable in the context of adaptation funding.

Although the principle of common but differentiated responsibility does allocate responsibility according to historic emissions, and stipulates that developed countries take a lead, it is not mentioned in direct connection to adaptation in the UNFCCC.⁵⁷ The precautionary principle arguably lowers the standard of proof of risk that greenhouse gas emissions cause irreversible damage to the environment. A preventive approach to environmental damage causing irreversible harm was recognised in the *Gabcikovo Nagymaros* case. Furthermore, the court held that although not the present case, environmental concerns might very well constitute the ‘objective existence of a peril’ to preclude wrongfulness of an act.⁵⁸

Similarly, the no harm principle and the polluter pays principle provide a starting point for investigating adaptation and climate change damage, but do not apply without limitations. The polluter pays principle is not incorporated in the UNFCCC. Furthermore, the polluter pays principle is not recognized a measure of responsibility between states under customary international law.⁵⁹ For the polluter pays principle to be recognized as a measure between states, it would have to be directly included in a treaty. As

⁵⁶ International Court of Justice, Judgment in Corfu Channel Case, p.23 (1949).

⁵⁷ That developed countries should take a lead is seen in article 4.3 UNFCCC, discussed above.

⁵⁸ Vienna Convention on the Law of Treaties 1969, article 25 1 (a) *the only means of the State to safeguard an essential interest against a grave and imminent peril.*

⁵⁹ Verheyen, *Climate change damage and International law*, p. 72, Martinus Nijhoff Publishers (2005).

of today, the polluter pays principle is primarily a soft law instrument criticized for lack of clear definition.

Moreover, implementing the polluter pays principle is left to national legislation resulting in actual regulation being dependent on national legislation. As a result, there is no uniform interpretation of the polluter pays principle.

The no harm principle is part of international customary law, as confirmed in the Corfu Channel Case and the Nuclear Tests case. Although it asserts that states must not allow actions within their jurisdiction or control to harm the territory of another state, the scope of the principle remains unclear, as discussed by Voigt. The difficulties in applying the no harm principle are examined in more detail in relation to compensation in the third section of this paper.

3 Adaptation in the UNFCCC

3.1 Introduction

The UNFCCC does not define adaptation. The closest definition of adaptation can be found in the Cancun Adaptation framework. According to this framework, adaptation measures are aimed at ‘at reducing vulnerability and building resilience.’⁶⁰

This section tries to understand the concept of adaptation by conceptualizing adaptation through the GEF funding policy. Because the UNFCCC does not define adaptation the concept of adaptation must instead be understood through its practice and function under the UNFCCC funding scheme. In the previous section, the guiding principles in the UNFCCC were analysed so as to shed light on what adaptation in the UNFCCC entails. Similarly, in this section, the funding policy of the GEF is analysed to understand the concept of adaptation.

The UNFCCC provides a starting point from which to conceptualize adaptation legally. As of today, there exists no quantifiable obligation to finance adaptation under the UNFCCC framework. Adaptation funding is entirely dependent on voluntary contributions. Since the objective of the UNFCCC is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, efforts have for long focused on mitigation rather than adaptation.⁶¹ With the adoption of the Cancun adaptation framework this is likely to change.

Given varying climate vulnerabilities and capacity to adapt to climate change, the discussion on adaptation has mostly focused on adaptation to the *adverse effects of climate change*.⁶² Adverse effects are defined in article 1 UNFCCC as

*changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.*⁶³

For the purposes of this paper adaptation will refer to the commitments in article 4.4 relating to adverse effects.

⁶⁰ Decision 1 /CP-16 paragraph 11 available at <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=4>.

⁶¹ Article 2 UNFCCC.

⁶² Example is found in article 4.4 of the UNFCCC.

⁶³ Article 1 UNFCCC.

The term adaptation appears five times in the UNFCCC text.⁶⁴ Whereas article 4.1 b and 4.1e mention ‘adequate adaptation’ and ‘cooperating in adaptation’, article 3.3 focus on adaptation in relation to the precautionary principle. It is only in article 4.4 that adaptation is mentioned in connection to the need to respond to varying climate vulnerabilities and the principle of common but differentiated responsibility

The developed country Parties and other developed Parties included in Annex II shall assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects

The financial resources mentioned in article 4.3, stemming from the principle of common but differentiated responsibility discussed in the preceding section, are provided through the setup of a financial mechanism according to article 11. The operation of the financial mechanism is entrusted to the GEF in article 21.3 in the UNFCCC.

The recently adopted Cancun adaptation framework commits parties to the setup of an additional fund, the Green climate fund, also under article 11 of the UNFCCC.⁶⁵ This fund is going to be administered by the World Bank acting as the ‘interim trustee’ for the first three years.⁶⁶ The organizational details of Green Climate Fund are yet to be finalised and no funding has yet been provided for adaptation. Therefore, the Green Climate change Fund will not be considered in this paper.

There are four funds under the GEF which fund adaptation, the GEF trust fund, the Least Developed Countries Fund (LDCF), the Special Climate Change fund (SCCF) and the Adaptation Fund. The projects under the GEF ‘are some of the first in the world tackling the actual impacts of climate change across development sectors, such as agriculture and food security.’⁶⁷ Each of these funds is addressed in the following section.

3.1.1 The Global Environment Facility Fund (GEF)

⁶⁴ Article 4.1b, 4.1e, 3.3, 4.3 and 4.4 UNFCCC.

⁶⁵ Decision 1 /COP-16 paragraph 102 available at <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=4>.

⁶⁶ Decision 1 /COP-16 paragraph 107 available at <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=4>.

⁶⁷ Report of the GEF to the sixteenth session of the conference of the Parties, p.22, 1 July 2010 available at http://www.thegef.org/gef/sites/thegef.org/files/documents/document/GEF_COP16_Report.pdf.

The GEF was set up in 1991 in collaboration between the World Bank, United Nations development program and United Nations Environment program so as to provide funding to protect the global environment.⁶⁸ The GEF was entrusted with the administration of adaptation funding scheme under the UNFCCC according to art 11 and 21. 3⁶⁹ Although the GEF was initially required to provide mitigation financing it was in 2001 made the supervisory body of the adaptation fund under the Kyoto Protocol as well as the LDCF and the SCCF.⁷⁰ Today the GEF has six areas of focus, climate change being one.⁷¹ Biodiversity and climate change make up the majority projects with the GEF as a whole. The GEF trust fund is entirely funded by developed country donations and is replenished every four years.⁷² To date the GEF trust fund has in total received 15.225 billion US dollars over five replenishments.⁷³

To understand what adaptation means according to the GEF, the GEF funding policy must be investigated. The GEF provides funding ‘to meet the agreed incremental costs of measures to achieve agreed global environmental benefits’.⁷⁴ The following sections investigate the concepts of ‘incremental costs’ and ‘global environmental benefit’ in the context of adaptation to the adverse effects of climate change.

3.1.2 Incremental cost

The GEF trust fund can only fund activities that exceed a certain baseline cost. Mace explains that ‘incremental cost refers to the cost differential between a baseline action to address a national need and the additional cost of an action that generates global environmental benefits.’⁷⁵ This in turn is a

⁶⁸ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.227, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

⁶⁹ Ibid.

⁷⁰ Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.135, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5.d03t02>.

⁷¹ Bouwer et al, *Financing Climate Change Adaptation*, p.53 (2006) available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9523.2006.00306.x/abstract>.

⁷² GEF Administered trust funds, GEF homepage available at http://www.thegef.org/gef/trust_funds.

⁷³ GEF Administered trust funds, GEF homepage available at http://www.thegef.org/gef/trust_funds April 2011.

⁷⁴ Who can apply? GEF homepage available at http://www.thegef.org/gef/who_can_apply April 2011.

⁷⁵ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.226, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

consequence of the UNFCCC only focusing on anthropogenic climate change, not climate variability as such. The baseline cost therefore refers to non-anthropogenic climate change adaptation measures. As a result, all adaptation measures funded by the GEF trust fund must be proven to only address anthropogenic climate change and not climate variability as such. However, as Verheyen points out ‘as of yet, there is no methodology’ to separate the costs arising from anthropogenic climate from those arising from climate variability.⁷⁶ Moreover, although guidelines provided by the GEF trust fund for the assessment of incremental costs have been recognized to be inadequate for adaptation purposes, ‘the GEF still reiterates the concept of incremental costs.’⁷⁷

Article 4.3 in the UNFCCC remains ambiguous as to that what financial needs are to be covered

The developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs ...they shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties.

On one hand article 4.3 speaks of resources needed; (suggesting a real need), but on the other hand it will only fund costs that are ‘agreed’ upon by the GEF.⁷⁸ The contradictory nature of art 4.3 suggests that that a balance needs to be struck between the actual need (resources needed) and the interest of the GEF donors, resulting in any funding obligation being impeded by donor discretion.⁷⁹

⁷⁶ Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.137, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5.d03t02>.

⁷⁷ Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.135, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5.d03t02>.

⁷⁸ Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.136, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5.d03t02>.

⁷⁹ Ibid.

3.1.3 Global benefit

In the Third Overall Performance Study of the GEF, global environmental benefit is defined by the GEF as

‘minimizing climate change damage through: mitigation measures that reduce greenhouse gas (GHG) emissions by means of the adoption of low- and zero-GHG-emitting technologies (for example, in the energy and transport sectors) or that protect or enhance the removal of atmospheric GHG by sinks, thus reducing the risk of climate change, and adaptation activities that minimize the adverse effects of climate change.’⁸⁰

The concept of ‘global environmental benefit’ has been criticized for being another obstacle to funding adaptation projects. Mace argues that although global environmental benefits could be obtained whenever a global environmental objective is met, ‘a global environmental benefit is distinct from the achievement of development or local benefits.’⁸¹

In relation to adaptation, global environmental benefit means ‘minimizing the adverse effects of climate change.’ However, many measures aimed at addressing adaptation could also qualify as general development projects.⁸² As a result Verheyen argues that these ‘would only fall within the scope of the climate regime if they specifically focused on adaptation’.⁸³

Moreover, the criteria ‘global’ is also problematic as most adaptation projects are mostly of local or regional benefit.⁸⁴

3.1.4 Donor influence

Although the GEF is obliged to follow the decisions of the Conference of the Parties (COP), the institutional arrangement of the GEF differs significantly from the COP where each party theoretically has one vote.⁸⁵

⁸⁰ Third Overall performance study of the GEF, Final Report, (ICF consulting 30 June 2005) at 84 citing incremental costs, (GEF/C.7 Inf.5, 29 February 1996).

⁸¹ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.227, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

⁸² Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.138, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5.d03t02>.

⁸³ Ibid.

⁸⁴ Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.135, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5.d03t02>.

⁸⁵ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.229, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

The decision making body in the GEF is the GEF council. Usually, all decisions are taken by consensus, but in consideration of any matter of substance in which no consensus is reached through regular procedure any member may require a formal vote. Because decisions requiring formal votes are generally taken ‘by a double-weighted majority, which requires an affirmative vote representing both a 60 % majority of the total number of participants and a 60% majority of the total contributions’ the major donors, such as the United States are the most influential.⁸⁶

This is according to Verheyen, one of the key problems within the GEF structure. The usage of the concept incremental, for example, however criticized by the GEF itself, remains because the donor community wishes to keep it.⁸⁷ Verheyen concludes that as result of this ‘the fund cannot and will not fund adaptation measures.’⁸⁸

At present, countries contribute to the GEF trust fund at their own discretion. The conventions institutional arrangement does not only facilitate donor influence in decision making, the convention also does not provide any structure for burden sharing between the OECD countries and economies in transmission in the UNFCCC.⁸⁹ Moreover, there are no objective criteria which establish the donor country’s obligations. Verheyen sees this as one the fundamental flaws within the present structure, and proposes that the principle of common but differentiated responsibility could provide some guidance in future negotiations ‘perhaps leading to a distribution of funding obligations on the basis of emission shares.’⁹⁰ Mace also argues, as outlined below, that the criteria for accessing LDCF and SCCF have been directly affected by donor influence.

3.2 The Adaptation fund

The Adaptation fund was created as a part of the so called Marrakesh Accords at the seventh COP in 2001. Although the Adaptation fund is not

⁸⁶ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.230, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

⁸⁷ Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.135, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5.d03t02>.

⁸⁸ Ibid.

⁸⁹ OECD countries and economies in transission are included in Annex 2 of the UNFCCC.

⁹⁰ Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.141, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5>.

financed by the GEF, it is managed by it. The Adaptation fund finances implementation of concrete adaptation projects in Non Annex One countries which includes activities to prevent desertification and land degradation. The Adaptation fund is funded through the clean development mechanism (CDM), one of the flexibility mechanisms under the Kyoto protocol, as well as other sources.⁹¹ The CDM is an arrangement which allows Annex One parties to create tradable certified emission reduction units by investing in projects for sustainable development. Art 12. 8 stipulates that

a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.

The Adaptation fund is therefore dependent on revenues from the CDM mechanism.

However, the dependency of the Adaptation fund is not restricted to the success of CDM mechanism. In effect, the CDM mechanism and its potential success in generating revenue is dependent upon the extent to which Annex One parties choose to meet their commitments under the Kyoto Protocol, as well as whether they choose to rely on the CDM for another commitment period.⁹² Furthermore, Annex Two parties, OECD countries and economies in transition, that have not ratified the Kyoto Protocol or do not utilize the CDM mechanism will not be contributing to the Adaptation fund to begin with. Mace concludes that ‘thus, like the discretionary SCCF and LDC Fund, the Adaptation Fund does not reflect an equitable sharing of the burden of adaptation among developed countries.’⁹³ Furthermore, the term ‘particularly vulnerable’ is not defined in the Kyoto Protocol or the UNFCCC. Hence no clear recipient of adaptation funding is identifiable. Due to this lack of transparent obligations and criteria Verheyen suggests that ‘it is currently impossible’ to determine what has to be financed by Annex Two parties.⁹⁴

3.3 Least Developed Countries Fund (LDCF)

⁹¹ Article 12 in the Kyoto Protocol.

⁹² Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.240, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

⁹³ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.241, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

⁹⁴ Verheyen, *Climate change damage and International law*, p. 137, Martinus Nijhoff Publishers (2005).

The LDCF was created as part of the Marrakesh accords. As of March 2011, 120 million US dollars has been generated to the LDCF.⁹⁵ Whereas the Adaptation fund under the Kyoto Protocol focuses only on incremental costs of adaptation, the LDCF's focus is to help the least developed countries (LDC) prepare and implement national adaptation programs of action (NAPAs). The NAPA process itself is a country driven and bottom up process aiming to result in a list of 'urgent' and 'immediate' adaptation projects.⁹⁶ Multidisciplinary NAPA committees research key adaptation measures 'whose further delay could increase vulnerability, or lead to increased costs at a later stage' by looking at vulnerability for climate change variability and looking at whether climate change is increasing associated risks.⁹⁷ Countries are eligible to apply for funding up to USD 200.000.

The criteria 'incremental cost' and 'global benefit' do not apply to the LDCF and SCCF.⁹⁸ The criteria 'incremental cost' and 'global benefit' are replaced by the concept of 'additional cost.' Instead of global benefit, funding is provided to development measures. Additional cost, just as incremental cost, is measured against a baseline of non climate change related development measures. The application of the additional cost principle has, according to a GEF report, been tested with 'positive feedback from stakeholders.'⁹⁹

The concept of additional cost is important to understand what adaptation measures are funded under the LDCF. Additional cost is described as 'costs imposed on vulnerable countries to meet their immediate adaptation needs.'¹⁰⁰ Similar to incremental cost, activities implemented in the absence of climate change (anthropogenic) constitute the baseline. All development measures above this baseline are covered by the LDCF.¹⁰¹ As a result, all

⁹⁵ GEF Administrated Trust Funds, GEF website available at http://www.thegef.org/gef/trust_funds.

⁹⁶ See Decisions 5 and 7 from COP-7 and guidelines for the Preparation of National Adaptation Programmes of Action. See also Establishment of a Least Developed Countries Expert Group (Decision 28/CP.7, 2001) and Establishment of a Least Developed Countries Expert Group (Decision 29/CP.7, 2001), Annex.

⁹⁷ Ibid.

⁹⁸ Revised programming strategy on adaptation to climate change for the least developed countries fund (LDCF) and the Special Climate Change fund (SCCF), Prepared by the GEF secretariat, p.11, November 18th 2010 available at <http://www.thegef.org/gef/sites/thegef.org/files/documents/SPA%20Approach%20Paper.pdf>.

⁹⁹ Revised programming strategy on adaptation to climate change for the least developed countries fund (LDCF) and Special Climate Change Fund, prepared by the GEF secretariat, 18th November 2010, p. 12 available at <http://www.thegef.org/gef/sites/thegef.org/files/documents/Program%20strategy%20V.2.pdf>.

¹⁰⁰ Programming paper for funding the implementation of NAPAS under the LDCF trust fund, p.4, GEF decision 28 /18 May 12th 2006, available at <http://www.thegef.org/gef/sites/thegef.org/files/documents/GEF.C.28.18.pdf>.

¹⁰¹ Programming paper for funding the implementation of NAPAS under the LDCF trust fund, p.8, GEF decision 28 /18 May 12th 2006, available at <http://www.thegef.org/gef/sites/thegef.org/files/documents/GEF.C.28.18.pdf>.

adaptation costs are measured against a fictional baseline separating anthropogenic climate change from natural climate variability.

In the history of the LDCF a rupture between the least developed countries and the GEF has manifested itself on several issues, indicating opposing views on how and to what extent adverse effects of climate change should be funded under the UNFCCC. On one occasion a conflict of interest between the GEF and the LDC countries arose in the negotiations following decision 6/COP- 9. Decision 6/COP-9 called upon the LDCF to support the implementation of NAPAS, prompting the GEF secretariat to produce a proposal entitled ‘Elements to be taken into Account in Implementing NAPAs under the LDC Fund.’ The proposal contained a ‘sliding proportional scale’ for LDC funding. Projects within the sliding scale did not need to further demonstrate its need for additional funding for adaptation. The proposal was not welcomed by the LDC countries. LDC countries argued that it should be up to the COP, and not the GEF to decide on the criteria for funding.¹⁰²

Furthermore, the question of the accessibility and allocation of funding under the LDCF has also become a major source of disagreement for the UNFCCC parties. The GEF secretariats decisive role in the LDC funding process has also been heavily criticized by LDC countries. At COP-9 in 2003, when no full decision was reached as to the allocation of the LDC funds and activities parties requested instead that the GEF develop operational guidelines based on a number of other elements.¹⁰³

The relevance of disagreement in the LDCF as to allocation of resources and the role of the GEF indicate that the concept and practice of adaptation is not simply a matter of implementing the UNFCCC. Implementing the UNFCCC must consider that the scope and exact meaning of adaptation under the UNFCCC and GEF differ between states. As a result, it is clear that the definition of adaptation under the UNFCCC is not uniform. The concept of adaptation and its legal implications are still not established in international law.

¹⁰² ‘UNFCCC COP-10 Highlights: Monday, 6 December 2004’, 12:250 *Earth Negotiations Bulletin* (2004), 1, available at www.iisd.ca/download/pdf/enb12250e.pdf.

¹⁰³ Report of the Conference of the Parties on its Ninth Session, see, specifically, Further Guidance for the Operation of the Least Developed Countries Fund (Decision 6/CP.9, 2003). Website and document <http://unfccc.int/resource/docs/cop9/06a01.pdf>.

3.4 The Special Climate change fund (SCCF)

The SCCF was established in accordance with decision 7/COP-2 with the purpose of complementing the GEF trust fund in a number of areas.¹⁰⁴ Adaptation efforts specifically focus on supporting developing countries in preparing national communications to the UNFCCC and adaptation activities related to national communications. Support is also provided for various activities such as information networks, prioritized projects identified in the National communication and early warning systems for extreme weather events.¹⁰⁵

The SCCF relies on ‘Parties included in Annex II of the Convention, and other Parties included in Annex I that are in a position to do so... to make contributions to the Special Climate Change Fund.’¹⁰⁶

Perhaps due to the fact that the SCCF relies on voluntary contributions, donor influence has come to play a crucial role in the funding of adaptation projects under the SCCF. Mace argues that the SCCF is one of the clearest examples of how the GEF has found ways of addressing donor discomfort by keeping open ended paragraph, resulting in vague obligations.¹⁰⁷ In 2004, the GEF produced a document ‘Programming to Implement the Guidance for the Special Climate Change Fund’, which addressed how the resources of the SCCF could be programmed during an initial 5-year period to respond to guidance provided at COP 9. The document however failed to address all paragraphs in the COP 7 decision, instead providing that additional guidance and programs would be developed. Moreover, the program made clear that ‘separate trust fund agreements would be concluded with each individual donor, governing the uses of the donors contributions to the fund.’¹⁰⁸ As a result Mace argues ‘the creation of distinct programs and use of separate administration agreements, allowed

¹⁰⁴ These areas are adaptation, energy, forestry, industry, technology transfers, transport, waste management and activities to assist developing country parties in diversifying their economies.

¹⁰⁵ Bouwer et al, *Financing Climate Change Adaptation*, p.52 (2006) available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9523.2006.00306.x/abstract>.

¹⁰⁶ Programming to implement the guidance for the Special Climate Change Fund adopted by the conference of the parties to the united nations Framework Convention on Climate Change at its ninth session, p. 6 paragraph 20, GEF decision 24/12,15 October, 2004 available at <http://www.ifad.org/operations/gef/climate/11.pdf>.

¹⁰⁷ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.237, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

¹⁰⁸ Programming to Implement the Guidance for the Special Climate Change Fund Adopted by the Conference of the Parties to the United Nations Framework Convention on Climate Change at its Ninth Session (GEF/C.24/12, 15 October 2004), paragraph 5, 36 and 37.

Available at <http://www.ifad.org/operations/gef/climate/11.pdf>.

donors to fund only the elements of Decision 7/CP.7 that they care to fund – although Decision 7/CP.7, agreed by the COP, provides that the SCCF is to finance activities in all areas.’¹⁰⁹

3.5 Discussion

The GEF funding mechanism under the UNFCCC is based on the commitments in article 4.3 and 4.4 which acknowledge common but differentiated responsibilities with regard to the adverse effects of climate change. Despite establishing that resources needed are to be financed by the developed country parties to assist developing countries in adaptation, such an obligation is not reflected in the current adaptation fund scheme under the GEF.¹¹⁰ Philippe Sands argues that provision 4.4 is ‘as close as we can get to implicit agreements that there is historical responsibility.’¹¹¹ However, even if one agrees with Sands controversial analysis, in practice this acknowledgment falls flat. Contribution to the GEF funding scheme for adaptation is voluntary and does not reflect any historic or present responsibility for climate change.

The GEF funding scheme, as stated in the introduction, is entirely dependent on voluntary contributions. The GEF funding scheme does not clearly identify the recipients of funding (particularly vulnerable is not defined in the UNFCCC), nor any criteria to oblige parties to the convention to provide funding.

The conditionality of adaptation funding under the GEF funding mechanism is manifested in numerous guidelines and provisions. For example, contributions to the Adaptation Fund under the Kyoto Protocol are only possible if revenue is generated from CDM projects, which means that a party could only contribute to the adaptation fund if it is party to the Kyoto Protocol and voluntarily chooses to use the CDM mechanism.¹¹² One of the world’s largest emitters, the United States, is still not party to the Kyoto Protocol.

The dependence of the Adaptation Fund on the Kyoto Protocol and the CDM mechanisms illustrates that contributing to the Adaptation fund is really completely at states discretion. Addressing how to apportion funding

¹⁰⁹ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.237, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

¹¹⁰ Article 4.3 UNFCCC as discussed stipulates *resources needed* are to be financed.

¹¹¹ Sands, *United Nations Framework Convention on Climate Change*, p.275, RECIEL 1 (3) 1992.

¹¹² Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.241, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

responsibility among the world's largest emitters is crucial. Verheyen suggests this is one of the most pressing concerns of the convention remarking that the convention does not 'stipulate any formula for burden sharing between Annex Two countries.'¹¹³ Furthermore, the future of the Adaptation Fund depends on the political will to continue its operation in a post 2012 agreement.

The institutional set up of the GEF trust fund, endows donors with major influence in the decision making process of the GEF.¹¹⁴ The leverage donors have in the GEF could be said to further disadvantage the position for countries that are to be worst hit by the adverse effects of climate change.¹¹⁵ Because the GEF trust fund is directly dependent on donations from developed countries, the GEF has developed a structure in which the donor country has a direct influence on what country and project receives GEF funding.¹¹⁶ This is shown in the SCCF funding policy as well as the LDCF funding structure.

As the analysis in this chapter has shown, the criteria of 'incremental cost' and 'global environmental benefit' have arguably proven inadequate in the context of adaptation.¹¹⁷

According to article 2 of the UNFCCC the objective of the convention is to prevent '*dangerous anthropogenic interference with the climate system.*' The adverse effects of climate change cannot be isolated from changes occurring due to natural climate variability. Today there exists no measurement to differentiate local causes of impacts (regional climate variability, socio-economic changes, land-use changes) from global causes (climate change caused by anthropogenic greenhouse gas emissions).¹¹⁸ Only focusing adaptation on anthropogenic climate change assumes that the adverse effects of climate change can be divided into human and non human induced. From the perspective of mitigating greenhouse gas emissions the focus of the UNFCCC on anthropogenic change is feasible. For purposes of adaptation however, this becomes a problem. It is against this backdrop that

¹¹³ Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.141, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5>.

¹¹⁴ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.241, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

¹¹⁵ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.240, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

¹¹⁶ Ibid.

¹¹⁷ Verheyen, *Adaptation to anthropogenic climate change- The International Legal Framework*, p.135, RECIEL 11 (2) 2002 available at <http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00312/abstract;jsessionid=B53DB1F619DAB6EA34B5EE67CC0D57F5>.

¹¹⁸ Bouwer et al, *Financing Climate Change Adaptation*, p.58 (2006) available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9523.2006.00306.x/abstract>.

the GEF criteria of incremental and additional cost create a fictional baseline. The fictional creation of a scientific tool to separate human induced climate change from non human induced climate change is an institutional problem within the UNFCCC. Since the GEF is mandated through the UNFCCC, the ultimate supervisory body of the GEF funding mechanism is the COP. In light of the difficulties of separating anthropogenic climate change from non anthropogenic climate change, the GEF has been given a new mandate to provide funding without establishing a baseline of non anthropogenic adaptation needs.¹¹⁹

This new mandate could be seen as the beginning of a new climate change scheme.¹²⁰ In this new scheme anthropogenic climate change would not determine what adaptation costs are funded. However, as of today this practice remains an exception in the GEF funding policy.

Mace and Verheyen argue that it is pressing in a post 2012 commitment to institutionalize funding so that the parties most responsible for climate change contribute.¹²¹ Not only will this maintain trust and commitment from developing country parties but also instill a preventive attitude in which future major emitters, such as China, will have incentive to implement mitigation efforts.¹²²

¹¹⁹ Verheyen, *Climate change damage and International law*, p. 362, Martinus Nijhoff Publishers (2005).

¹²⁰ Ibid.

¹²¹ □ Mace, *Funding for adaptation to climate change: UNFCCC and GEF developments since COP-7*, p.246, RECIEL 14 (3) 2005 available at www.field.org.uk/files/Adapt_funding_RECIEL_MJMace.pdf.

¹²² International energy agency IEA statistics, *CO2 emissions from fuel combustion highlights*, 2010 edition, p.7, available at <http://www.iea.org/co2highlights/co2highlights.pdf>.

4 Reparation according to the International law commission

4.1 Introduction

This section considers the concept of reparation according to the ILC draft articles on responsibility of States for internationally wrongful acts. The objective, function and different forms of reparation are analyzed by considering cases and awards. Restitution and compensation, two forms of reparation, are investigated in relation to environmental damage and climate change damage.

The issue of state responsibility has been the subject of much debate and has been specifically addressed by the ILC. The ILC was established under article 13.2 in the UN charter to facilitate ‘the promotion of the progressive development of international law and its codification.’¹²³ The ILC codification of international customary law is a rigorous procedure involving consultation with governments and scientific institutions before and after the completion of the draft articles.¹²⁴ The draft articles on responsibility of States for internationally wrongful acts which are analyzed in this paper, are the result of a codification process starting in 1949 and culminating with the adoption by the ILC in 2001.

The draft articles on State responsibility are a result of the commission’s work; they are not by virtue of the commission’s work part of customary law. Nevertheless, they ‘constitute a reasonable prima facie indication of the world view on a particular legal question.’¹²⁵ In other words, it is argued that ‘the Commissions influence is a material source of international law’ and in that sense ‘it has a role as part of a process which is in the realm of law making.’¹²⁶ Furthermore, Watts describes the work of the Commission as ‘not just convenient but authoritative.’¹²⁷

My analysis in this chapter presupposes that the ILC work is an authoritative view on state responsibility. Due to space constrains my investigation only considers the ILC draft articles.¹²⁸

¹²³ Article 1, statute of International Law Commission available at, untreaty.un.org/ilc/texts/instruments/english/statute/statute_e.pdf.

¹²⁴ Article 16, statute of International Law commission, available at untreaty.un.org/ilc/texts/instruments/english/statute/statute_e.pdf.

¹²⁵ Watts, *The international law commission 1949 to 1998*, p.15, KCMG, QC Oxford University Press, (2000).

¹²⁶ Ibid.

¹²⁷ Ibid.

¹²⁸ Statute of the International Court of Justice (ICJ) , article 38 (1) mentions three sources of international law a. international conventions, whether general or particular, establishing rules expressly recognized by the contesting states; b. international

If state responsibility can be established for an internationally wrongful act, the first obligation to arise is to discontinue the wrongful act, secondly to offer guarantees of non repetition, and thirdly to make full reparation.¹²⁹ To investigate whether causing climate change damage could in fact constitute an internationally wrongful act is beyond the scope of this paper.

The duty to ‘remove’ the damage caused is called reparation. Article 34 in the ILC draft identifies three forms of reparation ‘full reparation... shall take the form of restitution, compensation and satisfaction, either singly or in combination.’ This chapter provides an analysis of these notions.

4.2 Restitution

Restitution is defined in article 35 of the ILC draft articles as the obligation, ‘to re-establish the situation which existed before the wrongful act was committed, provided and to the extent that restitution.’ Restitution is however only provided if it is ‘not materially impossible’ and ‘it does not involve a burden out of all proportion to the benefit deriving from restitution instead of compensation.’¹³⁰ The obligation to provide restitution is therefore not unconditional.

Restitution is the primary means of reparation.¹³¹ The obligation to restitution was first articulated in the Chorzow factory case in which the court held that

‘Reparation, must as far as possible, wipe out all the consequences, wipe out all the consequences of the illegal act and which would, in all probability not have existed if the act had not been committed.’¹³²

Restitution was central in Trail Smelter arbitration and is of particular interest for climate change damage. The award in the arbitration illustrates what restitution might entail in the context of a continuous harmful activity. In the Trail smelter arbitration a Canadian smelter, near the U.S. border, emitted sulfur dioxide fumes. The fumes caused damage on U.S. territory and the question ended up before an arbitration tribunal. The tribunal held that Canada was responsible for the activities of the smelter under international law and that it had an obligation to compensate the U.S. for the damages. The tribunal also held that Canada should cease all activities that damaged U.S. territory and enforce a stricter operational regime for the

custom, as evidence of a general practice accepted as law; c. the general principles of law recognized by civilized nations.

¹²⁹ Article 30, ILC draft articles on State Responsibility 2001.

¹³⁰ Article 35, ILC draft articles on State Responsibility 2001.

¹³¹ Article 36, ILC draft articles on State Responsibility 2001.

¹³² Permanent Court of International (PCIJ) Series A no. 17, p 47.

smelter.¹³³ The setting up of a stricter operational regime for the smelter illustrates the point of awarding compensation for the damage already caused and at the same time address the future damage that would inevitably occur from the ongoing harmful activity. As is discussed in the analysis, potential compensation for climate change damage could be combined with commitments to curb future carbon emissions.

The tribunal in the Trail Smelter arbitration also called upon what has later been known as the no harm principle

‘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 territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.’¹³⁴

In this sense, the Trail Smelter award comes close to restitution ‘insofar as it compels the more diligent regulation of the smelter.’¹³⁵

The obligation to repair an internationally wrongful act by the way of restitution is therefore ‘well established’ and is, just as the no harm principle, not controversial.¹³⁶ Nevertheless, as is discussed in the following section, it is limited

For restitution to arise as a reparative obligation, it must be materially possible and not entail a disproportionate burden to provide restitution instead of compensation.¹³⁷ This in effect means that not all damages could be repaired through restitution. In the context of climate change damage this has been increasingly apparent. In this regard, the ILC definition of restitution is given ‘its narrowest possible meaning... it neither includes establishment of the situation that would have existed but for the wrong, nor does it require a transfer of any profit accruing to the wrongdoer because of the wrong.’¹³⁸

¹³³ Okidi, *Trail Smelter case*, p.1 Judicial decisions on matters related to the environment , International decisions volume 1(1998) available at [http://www.unep.org/padeli/publications/Jud.dec.%20pre\(Int%20.pdf](http://www.unep.org/padeli/publications/Jud.dec.%20pre(Int%20.pdf).

¹³⁴ Reports of International arbitral awards, Trail Smelter case, p.1996, Volume 3 p.1905-1982,UN 2006 available at http://untreaty.un.org/cod/riaa/cases/vol_III/1905-1982.pdf.

¹³⁵ Birnie & Boyle & Redgwell, *International law and the environment*, p.192, 3rd edition, Oxford University Press (2009).

¹³⁶ Sands, *Principles of International environmental Law*, p.837, 2nd edition Cambridge University Press (2003).

¹³⁷ article 35 ILC draft articles.

¹³⁸ Birnie & Boyle & Redgwell, *International law and the environment*, p.192, 3rd edition, Oxford University Press (2009).

According to Birnie and Boyle the requirement ‘not materially impossible’ implies two pre conditions.¹³⁹ Firstly, restitution requires that the situation before the damage occurred can be reestablished. Secondly ‘it is necessary to identify the baseline conditions that existed prior to when the damage occurred.’¹⁴⁰

Moreover, Birnie and Boyle argue that the extent of restitution is heavily dependent the state’s primary environmental obligations. Therefore, in the context of international state responsibility differing legislation on environmental protection might come into play. One such example is the protection of wildlife habitat. Provisions and regulations that protect wildlife habitat often result in restitution including reestablishment and protection of those same areas.¹⁴¹ Birnie and Boyle therefore conclude that ‘restitution of damage will not be either adequate or appropriate in each case.’¹⁴²

4.3 Compensation

The obligation to pay compensation is defined in article 36 ILC draft articles as

The state responsible for an internationally wrongful act is under an obligation to compensate for the damage caused thereby, insofar as such damage is not made good by restitution. The compensation shall cover any financially assessable damage including loss of profits insofar as it is established.

Compensation is a secondary form of reparation. For compensation to arise as a form of reparation, the damage must be financially assessable.¹⁴³ This provision has been criticized for being inadequate not only in the context of climate change damage but also for environmental damages in general.¹⁴⁴ The main question that arises is ‘whether environmental harm not quantifiable in terms of damage to property or economic loss is recoverable by way of monetary compensation.’¹⁴⁵ What methods of evaluating environmental damage would be acceptable? What damage to a states territory is assessable in monetary terms and are there any limitations?

¹³⁹ Birnie & Boyle & Redgwell, International law and the environment, p.192, 3rd edition, Oxford University Press (2009).

¹⁴⁰ Ibid.

¹⁴¹ Ibid.

¹⁴² Ibid.

¹⁴³ Article 36, commentary no.4, ILC draft articles on State responsibility 2001 with commentaries.

¹⁴⁴ Birnie & Boyle & Redgwell, International law and the environment, p.192, 3rd edition, Oxford University Press (2009).

¹⁴⁵ Ibid.

Birnie and Boyle ask the question ‘would the attribution of notional or non market based valuations of depleted natural resources be covered under this formulation?’¹⁴⁶ In the case of oil blow spill damages, the International Oil Pollution Compensation Fund has rejected non market based methods, whereas US, Italian and Russian law have employed the same.¹⁴⁷ Birnie and Boyle argue ‘whatever test is used, compensation is not unlimited, but bounded by the notion of remoteness and proximity.’¹⁴⁸ In effect this will mean that ‘regardless of whether international law in principle compensates for environmental damage, however defined, in some cases compensation will be denied on grounds of proximity and remoteness.’¹⁴⁹ In the case of global climate change damage addressing this issue is crucial.

In the context of environmental damage, the form of reparation of particular relevance is compensation. Often, environmental damage causes irreversible harm which makes restitution materially impossible. This problem was recognized and addressed in the *Gabcikovo Nagymaros* case.¹⁵⁰ In the *Gabcikovo Nagymaros* case the court held that ‘vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage.’¹⁵¹ As discussed in the analysis, this assertion indicates the necessity of a preventive approach towards irreversible damage.

When establishing a duty to pay compensation a legal investigation must assert that a state in fact has breached an obligation through an act that attributes responsibility to that state. A due diligence standard must be established. Furthermore, damage can only be compensated if it is proven to have a causal link to the wrongful act in question. Causation must be proven. As is discussed below, these considerations illustrate the constraints of compensation as reparation for climate change damage.

Strict liability, liability arising irrespective of culpability, for an internationally wrongful act is not found in the ILC draft articles on state responsibility. During the codification process of the draft articles for state responsibility, it was observed that ‘state practice did not support the codification of strict responsibility.’¹⁵²

¹⁴⁶ Birnie & Boyle & Redgwell, *International law and the environment*, p.194, 3rd edition, Oxford University Press (2009).

¹⁴⁷ Ibid.

¹⁴⁸ Birnie & Boyle & Redgwell, *International law and the environment*, p.193, 3rd edition, Oxford University Press (2009).

¹⁴⁹ Ibid.

¹⁵⁰ International Court of Justice, *Case concerning the Gabcikovo Nagymaros Project*, p.146 (1997) available through <http://www.icj-cij.org/docket/files/92/7375.pdf>.

¹⁵¹ Ibid.

¹⁵² Verheyen, *Climate change damage and International law*, p. 157, Martinus Nijhoff Publishers (2005).

4.3.1 Due diligence and foreseeability of harm

Defining due diligence, is ‘a prerequisite where a state invokes the no harm rule... to prevent harm, or indeed, compensation once damage has occurred.’¹⁵³

As discussed in the section on the no harm principle, the vagueness of the no harm principle leaves open to interpretation whether harm itself or only harm for certain activities is prohibited under customary law. In light of this, the ILC draft articles on the prevention of Transboundary Harm from Hazardous Activities attempted to address hazardous activities not regulated by international law. In the case of climate change damage, the activities giving rise to the damage, such as greenhouse gas emissions, often are not prohibited under international law. In this regard, the draft articles on Prevention of Trans boundary Harm from Hazardous Activities can provide guidance. In the draft articles on Transboundary Harm from Hazardous activities due diligence is defined as

*due diligence ...is not intended to guarantee that significant harm be totally prevented, if it is not possible to do so. .. the State of origin is required, as noted above, to exert its best possible efforts to minimize the risk. In this sense, it does not guarantee that the harm would not occur.*¹⁵⁴

However, only knowing about the consequences of greenhouse gas emissions is not sufficient to establish state responsibility. Verheyen argues that it is only by looking at ‘a states means and capacity to act within an international context’ that state responsibility can be established.¹⁵⁵

Similarly Dellink et al argue that ‘a more convincing argument is that countries could have acted from the moment they started to negotiate on how to address the problem.’¹⁵⁶ Since negotiations on climate change started around 1990, would that in effect mean that countries would only be liable to compensate for damage caused by emissions after 1990? Such suggestions are controversial in light of historic responsibility for green house gas emissions.

Furthermore, Voigt argues that acting with due diligence with respect to climate change damages ‘involves taking appropriate preventive measures,

¹⁵³ Verheyen, *Climate change damage and International law*, p. 174, Martinus Nijhoff Publishers (2005).

¹⁵⁴ Article 3, Commentary no 7, draft articles on the prevention of transboundary harm from hazardous activities with commentaries 2001.

¹⁵⁵ Verheyen, *Climate change damage and International law*, p. 174, Martinus Nijhoff Publishers (2005).

¹⁵⁶ Dellink et al, Common but Differentiated Responsibilities for adaptation financing: an assessment of the contributions of countries, The Institute for environmental studies (IVM) working paper, p.11 (2009).

even if full scientific certainty does not exist. Such a view is in line with the precautionary principle.’¹⁵⁷

If a due diligence standard can be established, what measures are to be taken according to it? Deciding what these measures are must be determined by looking at national circumstances and capacity. This requires a balancing of legitimate interests, such as the injured state’s interests versus the economic and technical capabilities of the defendant state.¹⁵⁸

Another key criterion in establishing state responsibility is foreseeability of harm.¹⁵⁹ Foreseeability of harm does not mean that the state could foresee the ‘precise magnitude or location of the injury’ - instead it suffices that the State, given its capacity ‘ought to have known the consequences.’¹⁶⁰ Determining if a state has fulfilled its due diligence obligation is therefore dependent upon whether it could foresee the harm. Voigt argues that because of the work of the IPCC, there is ‘little scope for states to argue that the likely impacts of increased GHG concentrations were not foreseeable.’¹⁶¹

4.3.2 Causation and causal uncertainty

Closely linked to the problem of foreseeability is the issue of causation. A casual link between an activity and harm occurred is necessary to establish successful tort claim. The form of causation relevant in the case of climate change damage is specific causation. Specific causation, as opposed to general causation, entails that a specific activity gives rise to a specific type of damage.¹⁶² The problem of establishing specific causation between activity and harm was illustrated in the Inuit circumpolar petition.

The Inuit petition was the first attempt to assert one state responsible for a global phenomenon resulting in global damage.¹⁶³ The Inuit circumpolar conference filed a petition with the Inter American Court of Human rights claiming that climate change, as a result of human activities, was resulting in infringements on the human rights of the Inuit in Canada, Denmark and the US. The U.S. as the world’s largest emitter, the petition held, has ‘explicitly rejected international overtures’ despite ‘knowledge that this

¹⁵⁷ Voigt, *State responsibility for climate change damages*, p.11, Nordic Journal of international law 77 (2008) 1-22P.

¹⁵⁸ Voigt, *State responsibility for climate change damages*, p. 12, Nordic Journal of international law 77 (2008) 1-22.

¹⁵⁹ Voigt, *State responsibility for climate change damages*, p. 11, Nordic Journal of international law 77 (2008) 1-22.

¹⁶⁰ Voigt, *State responsibility for climate change damages*, p. 12, Nordic Journal of international law 77 (2008) 1-22.

¹⁶¹ Ibid.

¹⁶² Voigt, *State responsibility for climate change damages*, p. 15, Nordic Journal of international law 77 (2008) 1-22.

¹⁶³ Koivurova, *International Legal Avenues to Address the Plight of Victims of Climate Change: Problems and Prospects*, p.289, 22 J. Envtl. L. & Litig. 267 2007.

course of action is radically transforming the arctic environment upon which the Inuit depend.’¹⁶⁴ This, according to the petition, gave rise to the US having a responsibility to take ‘immediate and effective action to protect the rights of the Inuit.’¹⁶⁵ In an analysis of the Inuit petition, Koivurova finds that even though science is clear about climate change being human induced, and that the adverse consequences of climate change will in fact infringe upon the human rights of the Inuit ‘holding the United States solely accountable for what is clearly a global environmental problem is a tremendous leap to make despite the United States’ role in generating greenhouse gases.’¹⁶⁶

An analogous causation problem subsists in connection with incremental cost under the GEF funding mechanism. Determining what is human induced climate change and what is not human induced becomes central to establish causation, just as measuring a baseline of non anthropogenic climate change is under the present adaptation funding scheme. Today ‘it is impossible to know whether any given storm is due to anthropogenic warming or some other contributing factor.’¹⁶⁷ Furthermore, on what basis would only one country be held liable for climate change damages? The fact that not only the defendant’s actions have contributed to climate change, including other pollutants and the plaintiffs own emissions means that the defendant state cannot be held solely responsible. Therefore, it is clear that establishing a causative link between global warming and regional climate change poses a ‘significant obstacle.’¹⁶⁸

Related to the discussion about specific causation is the problem of causal uncertainty. With what certainty could a states activity be found to cause certain damage? Nollkaemper argues that ‘the liability rule’ must be included using statistical and scientific evidence to examine the probability that a certain activity caused specific damage.¹⁶⁹ This is referred to as ‘probability of causation’ and is found using a mathematic formula which is

¹⁶⁴ Petition to the Inter American commission on human rights seeking relief from violations resulting from global warming caused by acts and omissions of the United States, p.6, Summary of the Petition, (7 December 2005)available at http://earthjustice.org/sites/default/files/library/legal_docs/summary-of-inuit-petition-to-inter-american-council-on-human-rights.pdf.

¹⁶⁵ Petition to the Inter American commission on human rights seeking relief from violations resulting from global warming caused by acts and omissions of the United States, p.7, Summary of the Petition, (7 December 2005)available at http://earthjustice.org/sites/default/files/library/legal_docs/summary-of-inuit-petition-to-inter-american-council-on-human-rights.pdf.

¹⁶⁶ Koivurova, International Legal Avenues to Address the Plight of Victims of Climate Change: Problems and Prospects, p.289, 22 J. Env’tl. L. & Litig. 267 2007.

¹⁶⁷ Smith & Shearman, Climate change litigation, *Analysing the law, scientific evidence & impacts on the environment, health & property*, p.107, Presidian legal publications (2006).

¹⁶⁸ Smith & Shearman, Climate change litigation, *Analysing the law, scientific evidence & impacts on the environment, health & property*, p.143, Presidian legal publications (2006).

¹⁶⁹ Nollkaemper, *International liability as an instrument to prevent and compensate for climate change*, p. 161, 26 A Stan. Env’tl. L. J. 123 2007.

found by dividing the excess risk by the background risk and the excess risk.¹⁷⁰

Related to the idea of solving casual uncertainty using probability of causation is the theory of ‘proportional liability.’ Proportional liability is found ‘by awarding the victim a proportionate amount of its damage based upon the probability of causation.’¹⁷¹ Proportional liability would therefore require the defendant state to compensate the plaintiff state according to the likelihood of that defendant state having caused the plaintiff states damage. This would in practice mean that, if, according to the above formula, the probability of causation is found to be 20 percent, the claimant would be compensated 20 percent of suffered damage from that defendant state.¹⁷²

Joint liability and multiple actors is another question that needs to be addressed when assessing liability for climate change damages. When anthropogenic climate change is caused by some actors who have emitted greatly in the past and others who recently become large emitters, how should responsibility be assessed? Although present day emissions are well documented, past emissions are not. Should a rule of joint or several liabilities be applied to accommodate for this difference? This issue is complex, and outside the scope of this paper. However, according to Nollkaemper ‘precisely because of the proportional character of the liability, monetary compensation seems the most appropriate remedy.’¹⁷³

As to what form of reparation is most appropriate in the case of climate change damage, Nollkaemper argues that both an obligation to pay monetary compensation for residual damage of climate change damage and an obligation to mitigate climate change would be appropriate. Noellkamper argues that ‘it may make little sense for the victim states to sue for a proportion of monetary damages representing the value of the damage caused by climate change if green house gas emissions were to continue unabated.’¹⁷⁴

4.4 Satisfaction

Satisfaction is the third form of reparation, only relevant when restitution and compensation do not suffice. Birnie and Boyle describe that in the case of environmental damage, satisfaction is left as ‘the only means of affording

¹⁷⁰ Nollkaemper, *International liability as an instrument to prevent and compensate for climate change*, p.162, 26 A Stan. Env'tl. L. J. 123 2007.

¹⁷¹ Nollkaemper, *International liability as an instrument to prevent and compensate for climate change*, p.164, 26 A Stan. Env'tl. L. J. 123 2007.

¹⁷² Ibid.

¹⁷³ Nollkaemper, *International liability as an instrument to prevent and compensate for climate change*, p.174, 26 A Stan. Env'tl. L. J. 123 2007.

¹⁷⁴ Ibid.

some nominal redress.’¹⁷⁵ Satisfaction in the form of reparation does not include any material compensation. Satisfaction is defined in the ILC draft articles on state responsibility as

*an obligation to give satisfaction for the injury caused by that act insofar as it cannot be made good by restitution or compensation. Satisfaction may consist in an acknowledgment of the breach, an expression of regret, a formal apology or another appropriate modality.*¹⁷⁶

In the context of climate change damage, satisfaction alone as a remedy seems distant. Although it is debatable whether all damage, such as ecological loss and traditional indigenous cultures are ‘financially assessable’, some damage, could be valued financially.¹⁷⁷ Satisfaction could perhaps under such circumstances be combined with compensation.

4.5 Discussion

Out of the three forms of reparation, compensation and restitution are more relevant in case of climate change damage. Satisfaction can be provided in the event reparation cannot be made either through restitution or compensation. Establishing state responsibility for an internationally wrongful act does not result in an unconditional right to restitution or compensation.

Restitution is the primary means of reparation. For restitution to be provided it must be ‘materially possible’, in the sense that the situation that prevailed before the wrongful act was committed could materially be re-established. Furthermore, restitution should not involve too much of a burden to provide instead of compensation. Baseline conditions that existed prior to the damage must also be identified.¹⁷⁸ Moreover, the extent of restitution today is dependent on the states primary obligations resulting in the extent of restitution differing between States. The criterion ‘materially possible’ has proven difficult in the context of environmental damages. Environmental damages often lead to irreversible harm; harm that cannot be repaired through restitution.

The secondary form of reparation is compensation. Similar to restitution, the obligation to provide compensation is dependent on a number of factors. For example, the damage occurred should not be too remote from the source, and it must be financially assessable. In the context of climate change damage this raises a number of questions. Is all climate change damage financially assessable, and if so, what method of valuing the damage should be applied? Furthermore, a successful claim for reparation for an

¹⁷⁵ Birnie & Boyle & Redgwell, International law and the environment, p.192, 3rd edition, Oxford University Press (2009).

¹⁷⁶ Article 37, ILC draft articles on State Responsibility 2001.

¹⁷⁷ Article 36, ILC draft articles on State Responsibility 2001.

¹⁷⁸ See above Birnie & Boyles arguments regarding restitution.

internationally wrongful act must establish a causal link between damage and the activity allegedly giving rise to the injury.¹⁷⁹ A due diligence standard must also be established. However, the absence of strict liability for internationally wrongful acts in international customary law does not preclude strict liability for emission of certain quantities of greenhouse gases in national legislation. With developing country parties reluctant to undertake binding commitments to mitigate greenhouse gas emissions, a protocol signed by the UNFCCC parties stipulating strict liability for greenhouse gas emissions appears distant. Perhaps it is more realistic to believe national legislation will prove the force necessary to push international law in a more progressive direction than trusting that a progressive agreement will be concluded in a near future.

Causality, casual certainty and foreseeability of harm make compensation dependent not only on what damage has occurred, but also on what proportionate measures the defendant state has taken and should have taken given its national circumstances.

According to ILC, the three forms of reparation shall either take place 'singly or in combination.'¹⁸⁰ However, Noellkamper suggests that even a combination of the different forms of reparation might not suffice. Instead he proposes that liability for climate change damage should not only claim compensation for residual damage, but also a responsibility to mitigate climate change. Some climate change damage includes flooding of land because of rising sea levels. Would such 'damages' be most 'effectively' repaired by the relocation of affected populations, or by receiving monetary compensation for loss of subsistence and land?

As is discussed in the analysis these kinds of considerations raise the question if adaptation as defined in the UNFCCC framework could be considered a form of reparation.

¹⁷⁹ See above discussion concerning strict liability an international customary law.
¹⁸⁰ Article 34, ILC draft articles on State responsibility 2001.

5 Analysis

In order to consider what factors reconcile adaptation as an extension of reparation, and what factors resist such a conclusion the preceding investigations must be broken down and analyzed collectively.

In light of the investigation on adaptation in the UNFCCC, adaptation can be conceptualized through its definition and form in the UNFCCC text, the adaptation funding policy under the GEF and general environmental law principles. In the following analysis, the relevance of the polluter pays principle, the principle of common but differentiated responsibility, and the precautionary principle are addressed in relation to adaptation under UNFCCC. The institute of reparation in the ILC framework is deconstructed into compensation and restitution and analyzed with reference to the definition of adaptation in the preceding section. The funding policy of the GEF is addressed with reference to reparation under the ILC framework.

In this analytical framework, adaptation in the UNFCCC and reparation according to ILC appear to have certain features in common. The objective and purpose of adaptation in the UNFCCC and reparation in the ILC framework have similar shape. The precautionary principle is of particular interest in understanding the objective of adaptation.

The precautionary principle, as explicitly stated in the UNFCCC, focuses on promoting preventive measures in case of scientific uncertainty. In relation to adaptation, its significance is less clear. However, argues Brunnee ‘there is ample evidence of their (principles) ability to exert influence even while their legal status remains contested.’¹⁸¹ The precautionary principle at the international level ‘has found expression in an array of environmental instruments’ including dispute settlement, and thus the principle has ‘come to influence the evolution, interpretation, and implementation of these agreements.’¹⁸²

The feasibility of the application of the polluter pays principle for adaptation funding purposes is similarly uncertain. The polluter pays principle is not recognised as measure of responsibility between states under international customary law, although Dellink et al suggest that adaptation funding could be one extension of the polluter pays principle.¹⁸³ Furthermore, the implementation of the polluter pays principle includes consideration of

¹⁸¹ Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.18, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

¹⁸² Ibid.

¹⁸³ See above section two Dellink et al, *Common but Differentiated Responsibilities for adaptation financing: an assessment of the contributions of countries*, The Institute for environmental studies (IVM) working paper, p.6 (2009).

negligence and foreseeability of harm. The definition and extent of negligence and foreseeability of harm may differ according to state legislation. Therefore, the actual implementation of the polluter pays principle may differ between states.¹⁸⁴

Solidarity, described as the third element of the principle of common but differentiated responsibility, does not give immediate rise to any binding legal obligations. However, similar to the concept of common concern, it provides a basis from which to argue that there should be a legal obligation to fund adaptation. The concept of common concern 'perhaps requires all states to participate in international efforts' to address concerns identified as common concern.¹⁸⁵ In practice, the concept common concern provides a starting point from which to argue that international cooperation is required to 'counter degradation of areas beyond national jurisdiction.'¹⁸⁶ The concept of common concern, similar to the precautionary principle, however lacks normative character and functions foremost as a 'participation rule.'¹⁸⁷ Moreover, no criteria in the concept of common concern outline what concerns are to be identified as 'common.'¹⁸⁸

What significance is then to be attributed to the mentioned principles in relation to adaptation funding for climate change damage? The principle of common but differentiated responsibility, the concept of common concern, the precautionary principle and the polluter pays principle cannot be considered part of customary law.¹⁸⁹ The no harm principle and principle 21 only provide vague guidance in the assessment of climate change damage.

Although the criteria to establish customary law are far from satisfied in the case of the polluter pays principle, the precautionary principle and the principle of common but differentiated responsibility, perhaps they indicate a likely development of environmental law. The inclusion of the mentioned principles in the 1972 Stockholm declaration reinforces the idea that they do indeed constitute a first step according to Brunnee. She argues that 'the (Stockholm) declaration should be appreciated as the beginning of a normative process' instead of being assessed according to how many of its principles have become part of customary law.¹⁹⁰

¹⁸⁴ See above discussion section two on the polluter pays principle.

¹⁸⁵ Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.4, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

¹⁸⁶ Ibid.

¹⁸⁷ Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.14, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

¹⁸⁸ Ibid.

¹⁸⁹ Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.16, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

¹⁹⁰ Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.19, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

Whereas adaptation under the UNFCCC framework refers exclusively to climate change damage, the institute of reparation has wide application to cover many types of damages. Reparation, according to the Chorzow factory case must ‘as far as possible, wipe out all the consequences, wipe out all the consequences of the illegal act and which would, in all probability not have existed if the act had not been committed.’¹⁹¹

Restitution, the primary form of reparation, can only be provided where it is ‘materially possible’ and where it is not an unproportionate burden compared to compensation. Compensation is only provided for damage ‘financially assessable’ and is further limited by ‘notions of proximity.’¹⁹² Damage too remote may not be compensated. Assessing causation, causal uncertainty and foreseeability of harm results in the actual compensation not simply being based on objective damage, but also to what degree the defendant state anticipated the harm, abated it, and finally to what extent the plaintiff state contributed to the damage. Despite reparation being a binding legal obligation it is, similar to adaptation in the UNFCCC, far from unconditional.

Reparation according to the ILC can only be made if the situation that existed before the wrong can be materially reestablished, or if the damage caused is financially assessable. As discussed above, not only climate change damage, but environmental damage in general challenges the notion that damage is ‘financially assessable’ or can be materially possible to retribute. Therefore, irreversible damage according to the ILC can only be made good by compensation assuming that the damage is financially assessable. Damage which is neither materially possible to retribute nor financially assessable will not be covered by reparation according to the ILC.

Adaptation measures, according to the Cancun adaptation framework, are aimed ‘at reducing vulnerability and building resilience.’¹⁹³ Adaptation measures are therefore aimed not a removing the damage caused, but rather to mitigate the effects of that damage. Furthermore, adaptation measures do not wait to be taken when the damage has already arisen, but are taken preventively to ‘reduce’ the damage. Adaptation in the UNFCCC can therefore be seen as acknowledging that climate change damage will in many respects be irreversible.

Can irreversible damage which is not financially assessable be repaired under customary law? There is no clear answer. Such damage might require new or different legal approaches. The Gabcikovo Nagymaros case suggests that in cases of irreversible damage that cannot be financially assessable a preventive approach is necessitated instead. The court asserted that ‘vigilance and prevention’ are required in light of the ‘irreversible character

¹⁹¹ Permanent Court of International (PCIJ) Series A no. 17, p 47.

¹⁹² See above discussion in section 3.

¹⁹³ Decision 1 /COP-16 paragraph 11 available at <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=4>.

of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage.’¹⁹⁴ Through this assertion, the court promotes an anticipatory approach, an approach requiring preventive action not unlike the objective of adaptation. Brunne concludes that in the *Gabcikovo Nagymaros* case the ICJ ‘gives a nod to the idea of precaution but does not endorse the precautionary principle.’¹⁹⁵ The preventive approach does not wait to regulate damage after it has occurred but requires action to be taken to minimize anticipated damage. The court continued by stating ‘new norms have to be taken into consideration, not only when States contemplate new activities but also when continuing with activities begun in the past.’¹⁹⁶

As discussed above, adaptation funding under the UNFCCC is entirely dependent on voluntary contributions. The GEF provides funding for either ‘incremental’ or ‘additional’ cost. These two concepts along with the concept of global benefit have in practice resulted in an adaptation funding policy which does not match actual adaptation needs.¹⁹⁷

The principle of common but differentiated responsibility, one of the key guidelines in the UNFCCC is mentioned in direct connection to adaptation in article 4.4. Nevertheless, it does not govern the adaptation funding structure to any tangible extent. The only provision in which the principle of common but differentiated responsibility takes enforceable shape is article 4.3.¹⁹⁸ As discussed in the section on environmental principles, the principle of common but differentiated responsibility does not regulate conduct between states.¹⁹⁹

No indication of a legal obligation for Annex Two countries to fund adaptation to the adverse effects of climate change is provided under the current regime.²⁰⁰ However, the conditionality of adaptation funding scheme, and the leverage donors have under the GEF structure is not necessarily a misfit with reparation as of the ILC draft articles. Even if a reparative obligation is established according to international law, the obligation is neither unconditional nor unrestricted as discussed in the section on reparation.

¹⁹⁴ International Court of Justice, *Case concerning the Gabcikovo Nagymaros Project*, p.146 (1997) available through <http://www.icj-cij.org/docket/files/92/7375.pdf>.

¹⁹⁵ Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.13, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

¹⁹⁶ International Court of Justice, *Case concerning the Gabcikovo Nagymaros Project*, p.146 (1997) available through <http://www.icj-cij.org/docket/files/92/7375.pdf>.

¹⁹⁷ see above discussion in section 3 of GEF policy.

¹⁹⁸ see above discussion in section 2 on the principle of common but differentiated responsibility.

¹⁹⁹ see above discussion in section 2 on the principle of common but differentiated.

²⁰⁰ see above discussion in section 2 GEF funding policy.

Another interesting correlation between reparation and adaptation in the UNFCCC, is causation and incremental and additional cost. Establishing what human induced climate change is, is central to establish causation and estimate incremental and additional cost. As of today, there exists no scientific measurement to distinguish global causes from local causes for particular manifestations of climate change. Hence, only funding adaptation to anthropogenic climate change seems an impossible task.

The central role such estimation nevertheless plays appears to be an institutional obstacle for adaptation funding purposes. Actual adaptation needs seem to stretch the fabric of not only the notions of reparation according to the ILC, but also GEF funding criteria. Central to both adaptation in the UNFCCC framework and compensation in the ILC context is separating anthropogenic climate change from non-anthropogenic climate change. As a result, both concepts seem to struggle with the same problem; determining damage or need based on linear models of causality. As discussed in the section on compensation, specific causation in the context of climate change is problematic since many factors, including the plaintiff state's own contribution to climate change, might have caused the damage. Grossman contrasts climate change litigation to tort claims involving asbestos and explains that 'unlike those cases, the complexity of the climate system means that several factors are involved in producing climatic phenomena, making it difficult to show the probability that defendants' contributions to anthropogenic climate change caused any particular phenomenon.'²⁰¹

Furthermore, 'the chaotic system underlying climatic effects makes it quite difficult to differentiate a particular pattern change in temperature or sea level caused by anthropogenic climate change from one caused by natural variability.'²⁰² As discussed above, specific causation relates to the problem of joint versus individual responsibility.²⁰³

The Trail Smelter award is interesting in light of Nollkaempers suggestion that compensation for climate change should be paired with commitments to also prevent future damage. The arbitration tribunal required Canada to compensate the US for its damages, cease the activities that caused damage on U.S. territory and set up a stricter regime for the smelter.²⁰⁴ The Tribunal deducted a preventive obligation from its conclusion that damage had in fact occurred on U.S. territory, and that such damage would continue to arise

²⁰¹ Grossman, *Warming up tot the not so radical idea: tort based climate change litigation*, Columbia journal of environmental law, p.24, 2003, no. 28 issue 1.

²⁰² Ibid.

²⁰³ See above discussion in section 3 on compensation.

²⁰⁴ Okidi, *Trail Smelter case*, p.1 Judicial decisions on matters related to the environment , International decisions volume 1(1998) available at [http://www.unep.org/padelia/publications/Jud.dec.%20pre\(Int%20.pdf](http://www.unep.org/padelia/publications/Jud.dec.%20pre(Int%20.pdf).

unless the Smelter was subject to some regime of control.²⁰⁵ The award in Trail Smelter thus indicates the futility of awarding monetary compensation without requiring that measures should be taken to prevent more of the compensated damage from arising.

However, climate change damage, as opposed to the damage in the Trail Smelter award, does not arise from one distinct source. As discussed, causation is difficult to establish because of the many sources giving rise to the same damage. Nevertheless, in light of the Trail Smelter Award Noellkampers suggestion appears legally realistic.

In light of the above discussion adaptation under the UNFCCC starts to position itself to reparation in new ways. The objective of reparation and adaptation are partially similar. Reparation entails to 'as far as possible' wipe out all the consequences of the illegal act so as to reestablish the situation which would have existed had the act not been committed.²⁰⁶ In short, to minimize the consequences of the illegal act. The three forms of reparation and the order in which they are considered, with restitution being the primary and compensation the secondary form, reflect this approach. Although adaptation is not defined in the UNFCCC framework, adaptation measures are focused on adverse effects, namely 'changes...resulting from climate change which have significant deleterious effects.'²⁰⁷ Moreover, adaptation is recognized as crucial because limiting emission levels will not combat the adverse affects of climate change.²⁰⁸ Against this backdrop, the objective of adaptation in the UNFCCC is to prevent and minimize damage caused by climate change. Similarly, reparation entails to wipe out the consequences of the illegal act as far as possible. In other words, minimize the consequences of the illegal act.

Could adaptation under the UNFCCC framework be a possible development of reparation under international customary law? There are indeed several factors that reconcile adaptation under the UNFCCC framework with international environmental law principles and reparation as of the ILC draft articles on state responsibility. Adaptation is not provided on an unconditional basis and neither is compensation unconditional. Perhaps more importantly, the objective of adaptation in the UNFCCC framework is similar to the objective of reparation, namely to minimize the consequences of the harmful/ illegal act. Furthermore, the ICJs conclusion in the Gabcikovo-Nagymaros case and the award in the Trail Smelter arbitration indicate a promotion by a preventive approach. This preventive approach can be seen as necessitated by the inability of traditional notions of

²⁰⁵ Reports of International arbitral awards, Trail Smelter case, p.1996, Volume 3 p.1905-1982, UN 2006 available at http://untreaty.un.org/cod/riaa/cases/vol_III/1905-1982.pdf.

²⁰⁶ Permanent Court of International (PCIJ) Series A no. 17, p 47.

²⁰⁷ Article 1, UNFCCC.

²⁰⁸ IPCC third assessment report: Climate change 2001, Working group 2: *Impacts, Adaptation and Vulnerability*, preface, available at http://www.grida.no/publications/other/ipcc_tar/.

reparation, such as restitution and compensation, to address irreversible damage. In this regard, the precautionary principle could be of central importance.

Is the concept of adaptation in light of international environmental legal development a logical extension of the precautionary principle and preventive approach? Perhaps yes. Whereas adaptation has incorporated the irreversible nature of climate change damage, reparation in the ILC context has not. Reparation according to the ILC rests on the assumption that damage can or should be assessed financially.²⁰⁹ This becomes a problem in the context of climate change damage. The precautionary principle is perhaps the only principle equipped to deal with the legal challenges of non financially assessable irreversible damage. With an emerging understanding of the interdependence between human activities and the ecosystem, new concerns, such as the concept of common concern, have paved way for a preventive rather than simply reparative obligation.²¹⁰ A preventive approach recognizes the irreversible damage and the notion of reparation's inability to adequately address such concerns.

However, many factors resist the conclusion that adaptation could constitute a form of reparation. The principle of common but differentiated responsibility provides little guidance in this regard as it is not recognized as a rule of conduct between states.²¹¹ Most importantly, state reluctance to fund adaptation and set up a mandatory funding scheme illustrates the lack of state practice and opinion juris needed to establish customary law. Furthermore, the polluter pays principle does not provide a basis from which to establish an obligation to fund adaptation between states.²¹² Adaptation funding under the UNFCCC is presently voluntary. Establishing a legal obligation to compensate climate change damage is a controversial question in itself. Claiming that adaptation could be a form of reparation is perhaps relevant only when such an obligation can be established.

²⁰⁹ See above discussion in section 3 on restitution.

²¹⁰ Brunnee, *The Stockholm declaration and the structure processes of International Environmental law*, p.3, (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1437707.

²¹¹ See above discussion in section 2 on the principle of common but differentiated responsibility.

²¹² See above discussion in section 2 on the polluter pays principle and Dellink et al proposition that the polluter pays principle can be extended to include adaptation cost.

6 Conclusion

Perhaps the true magnitude of future adaptation needs have not yet fully been understood scientifically nor legally. The GEF funding mechanism is not set up to cover the full adaptation cost. It is sometimes, as seen through the LDCF only granting up to 200.000 USD, not mandated to grant more than a particular sum to individual states. The objective of the UNFCCC is to achieve stabilization of green house gas concentrations in the atmosphere to prevent dangerous anthropogenic interference with the climate system. The UNFCCC is primarily designed to abate *anthropogenic* climate change. Adaptation funding under the GEF mechanism, entrusted to the GEF, provides funding in accordance with the criteria of incremental or additional cost. These two concepts rest on the assumption that it is possible to distinguish between non anthropogenic and anthropogenic climate change. However, presently there exists no scientific instrument to separate the adverse effects of climate change from natural climate variability. Climate change will give rise to new kinds of damages that inherently cannot be materially restituted or easily financially estimated. Adaptation needs will only continue to increase. If funding under the UNFCCC will not suffice to meet adaptation needs, how is adaptation in the UNFCCC then to be conceptualized in relation to established concepts of reparation such as compensation?

This investigation has shown that adaptation in the UNFCCC has similar features to that of reparative obligations according to the ILC draft articles on State responsibility. Most importantly, the objective of reparation according to the ILC is to wipe out as far as possible the consequences of the illegal act and the objective of adaptation is the same, apart from the concept of adaptation in the UNFCCC incorporation of *irreversible damage*. Furthermore, compensation according to the ILC is restricted to what is financially assessable; adaptation similarly is based on a purely economic estimation. However, adaptation to the adverse effects of climate change, as well as environmental damage in general challenges the notion that damage can be compensated financially.

How does international customary law address irreversible non financially assessable damage? Developments in International Environmental law emphasizing a preventive rather than reparative obligation, such as the precautionary principle, are paving way for a novel approach to reparation. The Stockholm declaration, containing the precautionary principle and the concept of common concern, and the Rio declaration, containing the principle of common but differentiated responsibility, could perhaps be seen as the beginning of a normative process. In such a paradigm prevention rather than reparation as we know it today is central. An obligation to fund adaptation, as a form of reparation, would arguably be seen as an extension of the precautionary principle. As of today however, lack of opinion juris

and state practice of funding for adaptation indicate that such a development of the precautionary principle is still distant.

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