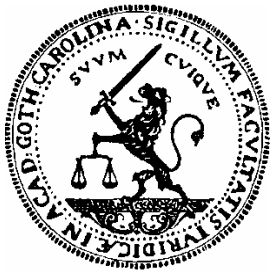


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# Claiming State Responsibility for Climate Change Damages

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# Contents

# Summary

The anthropogenic climate change that we are experiencing today has primarily been brought on by GHG emissions from developed countries. However, scientific estimates show that some of the most severe adverse impacts of climate change will strike in regions of the world that have made only minor contributions to the making of the current climate change and that have little capacity to adapt to the changes as they occur. The question put to the fore by this situation is to what extent the GHG emitting States are responsible to compensate the injured States for the damage suffered. This thesis attempts to apply the doctrine of State responsibility to the issue of climate change in order to determine if said doctrine offers an applicable mean of redress.

The primary obligations of interest in this context are Arts. 4.2 and 4.4 of the UNFCCC, the emission reduction targets set under the Kyoto Protocol and the customary law obligation of No Harm. The articles set up by the UNFCCC bear the disadvantages of being put in vague and non-compulsory wordings, but the advantage of having close to global applicability. The Kyoto Protocol has the advantage of setting up concrete reduction targets, but the disadvantage of being un-ambitious as to the levels of the targets set as well as having only limited applicability. The No Harm-rule is therefore the most interesting primary rule in this context.

A breach of the no Harm rule would, in respect to climate change, consist of failure to exercise diligent control of activities, when it is foreseeable that the activities could cause significant deleterious effects. The extent of measures expected from a reasonable Government when confronted by a high risk of significant harm depends on its capacity and applicable international standards.

There are many challenges involved in awarding compensation for the damage suffered. Some of the most obvious are to prove general and specific causation, and to apportion the costs. The link between GHG emissions and climate change could be considered as being too remote, or indirect due to the complex causal chains. On the other hand, there is almost global consensus among scientists as to the causes behind anthropogenic climate change. As for specific causation, it would be unfeasible to link specific emissions to specific damages. However, if claims for responsibility were to be precluded due to difficulties with establishing causation, it would undermine the objective of the primary rule. It should therefore be sufficient that the damage at least to some extent was caused by the emission in order for a tribunal to award damages. Apportioning of costs can be based on either emission data, or on the concept of common but differentiated responsibilities. It can also be made with a combination of these two methods by combining the State's emissions with its GNP.

It has been claimed that the State responsibility regime is ill equipped to handle environmental damages, and climate change damages is no exception. An attempt to seek redress for climate change damages by

claiming responsibility based on breaches of the No Harm-rule seems indeed to be a near impossibility. However, the recognition shown towards duties to prevent and mitigate harm could still trigger and influence the adoption of additional, and more effective legislative and administrative measures.

# Sammanfattning

Den antropogena klimatförändring som vi upplever idag har framförallt orsakats av I-ländernas växthusgasutsläpp. Emellertid så visar vetenskapliga uppskattningar att några av de mest allvarliga skadliga konsekvenserna av klimatförändringen kommer att drabba regioner som har gjort endast smärre bidrag till skapandet av den nuvarande klimatförändringen och som vidare har liten kapacitet i fråga om att anpassa sig till förändringarna allt eftersom de uppstår. Den fråga som uppstår ur denna situation är i vilken utsträckning som de växthusgasutsläppande staterna är skyldiga att kompensera de skadelidande staterna. Detta examensarbete syftar till att försöka tillämpa statsansvarsdoktrinen på klimatförändringsproblematiken för att kunna utröna om doktrinen i fråga erbjuder ett tillämpligt tillvägagångssätt för gottgörelse av skadan.

De primära regler som är av intresse i den här kontexten är Arts. 4.2 och 4.4 i UNFCCC, utsläppsreduktionsmålen som har satts upp under Kyotoprotokollet och den sedvanerättsliga regeln om No Harm. Nackdelen med artiklarna som satts upp under UNFCCC är att de uttryckta i vaga och icke-tvingande ordalag, men de bär också fördelen av att ha nästintill global tillämplighet. Kyotoprotokollet har som fördel att det sätter upp bindande reduktionsmål, men till dess nackdel att reduktionsmålen är oambitiösa och det har vidare endast begränsad tillämplighet. Därför är regeln om No Harm den mest intressanta primära regeln i det här sammanhanget.

I fråga om klimatförändring skulle ett brott mot No Harm-regeln bestå av att inte uppfylla omsorgsfull kontroll av aktiviteter, när det är förutsebart att dessa aktiviteter riskerar att orsaka signifikanta, skadliga effekter. När det föreligger en hög risk för en signifikant skada förväntas en förnuftig regering vidta åtgärder i en utsträckning som är förenlig med dess kapacitet och tillämpliga internationella standarder.

Många utmaningar är involverade i beviljandet av kompensation för den lidna skadan. Några av de mest uppenbara består i att bevisa generell och specifik kausalitet, och att fördela kostnaderna. Länken mellan växthusgasutsläpp och klimatförändring skulle kunna betraktas som allt för avlägsen, eller för indirekt till följd av de komplexa orsakssambandskedjorna. Å andra sidan föreligger nästan global konsensus bland forskare rörande orsakerna bakom antropogen klimatförändring. Angående den specifika kausaliteten skulle det vara omöjligt att länka specifika utsläpp till specifika skador. Skulle däremot ansvarsanspråk vara uteslutna på grund av svårigheter med att bevisa orsak så skulle det underminera syftet med den primära regeln. Därför borde det vara tillräckligt att skadan åtminstone till viss del har orsakats av utsläppet för att en tribunal ska kunna tilldela kompensation. Fördelningen av kostnaderna skulle kunna göras baserat på utsläppsdata, eller i enlighet med konceptet om gemensamma men differentierade skyldigheter. Det skulle också kunna göras baserat på en kombination av dessa metoder genom att staters utsläpp ställs mot deras BNP.

Det har hävdats att statsansvarsregimen är dåligt utrustad för att kunna hantera miljöskador och klimatförändring utgör inget undantag. Ett försök att söka gottgörelse för klimatförändringsskador genom att hävda ansvar baserat på brott mot regeln om No Harm tycks onekligen vara nästintill omöjligt. Däremot så skulle det erkännande som har visats gentemot skyldigheter att förebygga och lindra skada kunna trigga och påverka antagandet av ytterligare, och mer effektiv, lagstiftning och administrativa åtgärder.

# Preface

The fact that we are experiencing a change in the climate system and that the components of our environment will change with it is a matter that is beyond discussion. What we can, and should, discuss is how to respond to climate change in ways of mitigation and adaptation, but also how to address the significant adverse effects from climate change that will occur. According to scientific evidence and estimates, the impacts of climate change will strike the earth in an uneven way, which neither will be in conformity with the regional contributions towards the making of anthropogenic climate change, nor with the regional capacity of adaptation. The equitable sharing of the costs that climate change will result in is the topic that will be discussed in this thesis.

I wish to express my sincere gratitude to my supervisor, Gudmundur Alfredsson, for his sensible advice and patience. I also wish to thank Christina Voigt for the education and inspiration I received in her class, but also for advising me to keep the topic of my thesis at a time when I thought I should give it up and choose a more easily comprehended topic. Another person to whom I owe many thanks is Selma Oliver, for providing me with invaluable assistance both as a friend and as a fellow student.

I wish to dedicate this thesis to my sister for always believing in me, to my parents for their undying love and for the lessons that they taught me, and to my niece and my unborn niece or nephew for being the ones that will inherit the earth.

Ann-Charlotte Rosenblom, The Hague, June 2009

# Abbreviations

| | |
|---|---|
| AAU | Assigned amount unit |
| AR4 | IPCC 2007 Synthesis Report (Forth Assessment Report) |
| CDM | Clean Development Mechanism |
| CER | Certified emission reduction |
| CFC | Chlorofluorocarbon |
| $CH_4$ | Methane |
| $CO_2$ | Carbon dioxide |
| COP | Conference of the Parties |
| EIA | Environmental Impact Assessment |
| ERU | Emission reduction unit |
| GDR | Greenhouse Development Rights |
| GHG | Greenhouse gas |
| GNP | Gross National Product |
| ICJ | International Court of Justice |
| ILA | International Law Association |
| ILC | International Law Commission |
| ILM | International Legal Materials |
| INC | Intergovernmental Negotiation Committee for the UNFCCC |
| IPCC | Intergovernmental Panel on Climate Change |
| MCP | Multilateral Consultative Process |
| $N_2O$ | Nitrous oxide |
| OECD | Organisation for Economic Co-operation and Development |
| PCIJ | Permanent Court of International Justice |
| ppb | parts per billion |
| ppm | parts per million |
| Ppt | parts per trillion |
| RIAA | Reports of International Arbitral Awards |
| RMU | Removal unit |
| SEI | Stockholm Environment Institute |
| $SF_6$ | Sulphur hexafluoride |
| SRES | IPCC Special Report on Emissions Scenarios 2000 |
| TAR | IPCC Third Assessment Report: Climate Change 2001 |
| UN | United Nations |
| UNCED | United Nations Conference on Environment and Development |
| UNCLOS | United Nations Convention on the Law of the Sea, 1982 |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change, 1992 |

| | |
|---|---|
| UNGA | United Nations General Assembly |
| UNRIAA | United Nations Reports of International Arbitral Awards |
| W | Watt |
| $W/m^2$ | Watt per square meter |
| Yr | year |

# 1 Introduction

The world is facing an immense environmental, social and economic threat: the global average temperature is rising and there is unambiguous evidence of the existence of a climate change. Effects from climate change can be observed and measured today and there is no doubt that there will be significant additional adverse effects in the future, irrespective of the path taken by demographic, economic and technological development. However, the climate has undergone changes previously during the history of Earth and the components of our planet's environment have undergone changes along with it. There have been glacial periods and inter-glacial periods – the climate is continuously changing. Climate change as a phenomenon and climate change related impacts are thus in no way a novelty. Nevertheless, the historical climate changes happened for natural reasons. The principal novelty of the climate change that we are experiencing today is that it is mainly the result of human activities.

A sentence used many times before is that the environment knows of no boundaries. This is certainly true in the case of global warming. This global threat has primarily been brought on by the industrialized States of the world. The United States was, for example, the origin of more than 30% of the total carbon dioxide emission during the period 1990-1999, while other States' contributions to the increased atmospheric levels of GHGs were close to non-existent.[1]

The less developed States are, besides having contributed the least to the problem, furthermore worse equipped to manage the adverse effects from climate change and are often under a lot of strain already as it is. To make matters even worse, predictions of future effects from climate change show that some of the most severe effects will strike in poor regions of the world. The peoples at most risk from climate change are those that reside in densely populated and low-lying areas, such as river deltas and small islands. Many of these areas are situated in regions such as the River Ganges Delta, The Mekong River Delta, and on islands in the South Pacific.

## 1.1 Subject and Purpose

Climate change impacts will, as noted, strike the planet in an uneven manner. States that have little capacity to adapt to the effects from climate change and that have made minor contributions to the making of climate change will suffer severe consequences from it. The legal question put to the fore by this situation is whether international law offers a possibility for States injured by climate change related impacts to claim, and be awarded, compensation for the damage suffered.

Thus, the purpose of this thesis is to examine if there can be State responsibility for climate change damages and to what extent injured States

[1] See Table 3 for figures on top emitters.

can be awarded compensation for such damages. International law dictates that every international wrongful act by a State gives rise to international responsibility. I will therefore examine if emissions of greenhouse gases could constitute an internationally wrongful act. I will also discuss which kind of damages could be compensated if international responsibility were established. A subordinate purpose is to provide an overview of the shortcomings of the traditional instrument of State responsibility in this context. These are namely shortcomings that need to be urgently addressed in order to meet the requirements of the future – if the State responsibility approach is to be successfully employed in the case of climate change damages.

## 1.2 Scope

The focus of this thesis will be placed on the potential to make claims based on breaches of the climate change regime, alternatively the No Harm-rule. I will not look in to whether particular States can seek State responsibility for the damage they will suffer and whether such claims could be successful, but rather if there is a more general possibility for such claims according to existing international law. I will not research the legal procedure either. Topics such as the competent forum, the competent claimant, and exhaustion of local remedies will therefore not be addressed within this thesis.

The lack of a competent forum with jurisdiction over this matter is a true obstacle if there would be an attempt to establish State responsibility for climate change damages in practice. Moreover, while some of the challenges presented in this thesis can be overcome, others can only be argued against in theory, but are likely to prevail in practice. All readers of this thesis should therefore bear in mind the magnitude of the challenges presented, and be made aware of the argumentative nature of this thesis.

## 1.3 Method

My approach to the topic will be to start with a chapter on climate change from a scientific perspective. The purpose of this chapter is to support the claims made in the introduction, and to account for the background of this thesis. The presented scientific estimates will also be essential for enabling later discussions on thresholds set for the magnitude of risk and harm. It is furthermore relevant for the discussion on compensable damage.

I will then continue on to the existing international regime governing climate change. The presentation will be focused on the possibilities and shortcomings of the regime, with regard to compensation of climate change damages. It is to come before the chapter on State responsibility since it is necessary to establish first if recourse to the general law on State responsibility is available.

The next chapter introduces the doctrine of State responsibility and comments on points which are relevant for the topic of this thesis, such as compensable damages and the elements of an internationally wrongful act. It will, furthermore, justify the use of the 2001 ILC Articles on the Responsibility of States for Internationally Wrongful Acts as a source of international law and as a codification of customary law regarding State responsibility.

While the previous section considered second order rules of international law, the following section will look in to the primary obligation of customary law that might have been breached in the causing of climate change. The customary law obligation addressed is the No Harm-rule. It will be reviewed by its contents and applicability to climate change.

The next topic is due diligence, which will be addressed for two reasons. First, emissions of carbon dioxide and other greenhouse gases are mostly due to activities by privately owned industries and private persons, and it is therefore essential that these actions can be attributed to the State, if State responsibility is to be established for climate change damages. Second, as will be noted in the previous chapter, the causing of harm would only amount to a breach of the No Harm-rule if significant damages have occurred due to failure to observe due diligence. However, these two reasons are not separate from each other.

I will then end by analysing whether it is possible to claim compensation for climate change damages based on the gathered information.

# 2 Climate Change

This chapter on climate change will provide a somewhat simplified overview of the climate change issue. The purpose of giving this overview is to clarify the situation at hand, to which the rules and regulations in the following chapters are to apply. The purported information will primarily be based on the Intergovernmental Panel on Climate Change (IPCC) 2007 Synthesis Report (AR4).[2] The Synthesis Report itself is based on assessments carried out by the IPCC's three Working Groups. It is claimed to give 'an integrated view of climate change' as it includes topics such as observed changes and their effects, the causes of climate change, projections of future climate change, and also how to adapt to, and mitigate climate change as it occurs.[3]

## 2.1 Definitions

The term climate change, when used by the IPCC in AR4, refers to:

*...a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity.*[4]

This use of the expression by the IPCC differs, however, from the definition stated in the 1992 UN Framework Convention on Climate Change (UNFCCC), where the term climate change is defined as:

*...a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (UNFCCC, Art. 1.2).*

A quick comparison of these two definitions of climate change leads to the conclusion that the definition used in AR4 is wider than that in the UNFCCC since it includes climate change due to the natural variability of the climate system. The definition used in the UNFCCC is on the other hand restricted to climate change that directly or indirectly can be attributed to anthropogenic activities.

[2] IPCC: *Fourth Assessment Report (AR4): Climate Change 2007: Synthesis Report*.
[3] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 26.
[4] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 30.

## 2.2 Observed Changes and Effects

*Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level.*[5]

The increase in temperature is manifesting itself around the globe, but it is more apparent at higher northern latitudes with an increase in the average Arctic temperature that is almost two times the global average rate in the past century. In the Northern Hemisphere, the average temperatures during the latter half of the 20th century were 'very likely' to be higher than during any other 50-year period in the in the last five centuries.[6] The average temperatures during that time were in addition 'likely' to be the highest in at least the past 1.300 years. Furthermore, eleven out of the twelve years between 1995 and 2006 can be found among the twelve warmest years on record, with records of the global surface temperature having been kept since 1850.[7]

Though the warming of land regions has occurred at a greater speed than the warming of the global ocean, 'the amount of heat stored in the ocean exceeds all the other reservoirs combined'.[8] Over 80% of the heat that has been added to the climate system has in fact been taken up by the ocean.[9] Once heat has been added to the ocean, it is stored due to the oceans capacity to store enormous amounts of heat over long periods.[10]

As for the melting of snow and ice, decrease in snow and ice volumes is consistent with warming and appears in both hemispheres. Satellite data show that the Arctic sea ice extent has an average annual decrease of 2.7 [2.1 to 3.3] % per decade since 1978.[11] The largest decrease in seasonally frozen ground has appeared in the Northern Hemisphere with about 7% of the areal extent since 1900 and up to 15% in the spring.

Also consistent with warming are the increases in sea level. The global average increase in sea level was 1.8mm per year between 1961 and 2003. The increase rate for the last ten years of that period was faster, as the average rate at which the sea level rose between 1993 and 2003 was about 3.1mm per year. The thermal expansion of the ocean is behind 57% of the increase in sea level since 1993. The decrease in glaciers and ice caps contributed with about 28% and the remaining contribution comes from the diminishing polar ice sheets.[12]

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[5] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 30.
[6] The expressions used to express the probability of occurrence by IPCC in their reports are to be understood as follow: 'virtually certain' – more than 99%, 'extremely likely' – more than 95%, 'very likely' – more than 90%,'likely' – more than 66%, 'more likely than not' – more than 50%, 'about as likely as not' – 33 to 60%, 'unlikely' – less than 33%, 'very unlikely' – less than 10%, 'extremely unlikely' – less than 5%, 'exceptionally unlikely' – less than 1% (IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 27.).
[7] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 30.
[8] Ruddiman, W. F. (2008) p. 315.
[9] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 30.
[10] Ruddiman, W. F. (2008) p. 315.
[11] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 30.
[12] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 30.

Table 1, which can be found below, lists some observed effects accounted for in AR4. The confidence statements express an estimation of uncertainty and confidence in the accuracy of the observation based on studies performed by the Working Groups.[13] The shortcomings in geographical balance should be noticed, which is due to the scarcity in data from developing countries.[14]

**Table 1 –** Table of effects accounted for in AR4 and the estimated confidence in them

| **Effects documented with 'very high confidence':** | **Effects documented with 'high confidence':** | **Effects documented with 'medium confidence':** |
|---|---|---|
| Strong effects to terrestrial biological systems (*e.g.* earlier leaf unfolding, bird migration and laying of eggs, and changes in the dispersion of animal and plant species).[15] | Effects to natural systems connected to snow, ice and frozen ground (*e.g.* enlarged and greater numbers of glacial lakes, increasing ground instability in permafrost regions, and increased occurrence of rock avalanches in mountain regions).[16] | Effects on agriculture and forestry management in the Northern Hemisphere (*e.g.* earlier spring planting of crops and changes to the occurrences of fires and pests).[17] |
| | Effects to the hydrological system (*e.g.* increased runoff and earlier spring peak discharge in many glacier- and snow fed rivers).[18] | Effects to human health (*e.g.* increased number of heat-related deaths in Europe).[19] |
| | Effects to the marine and freshwater biological systems (*e.g.* shifts in range of fishes and earlier fish migrations in rivers).[20] | Effects on certain human activities in the Arctic (*e.g.* hunting) and in lower-elevation alpine areas (e.g. mountain sports).[21] |

The table above is in no way an exhaustive listing of the occurring effects. Due to adaptation and non-climate drivers, some other effects of regional climate change on the natural and human environment can be difficult to

[13] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 30.
[14] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 31.
[15] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 33.
[16] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 31.
[17] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 33.
[18] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 31.
[19] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 33.
[20] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 33.
[21] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 33.

distinguish as they appear.[22] There are further effects that are still to be identified, or be identified with enough scientific certainty. For example, the loss of coastal wetlands and mangroves, and the increasing damage from flooding, have still not become established trends, even though the causes behind these occurrences are sea level rise combined with human development.[23]

## 2.3 Causes

The climate on Earth is mostly driven by solar radiation energy. Drivers of climate change cause the energy of the climate system to change through their effect on the absorption, scattering and emission of radiation within the atmosphere and at the Earth's surface.[24] These drivers can originate from both human activities as well as be naturally occurring.

Before the industrial revolution, the naturally occurring greenhouse gases trapped 150 of the incoming 343 W of solar radiation per square meter of the Earth's surface ($W/m^2$).[25] This is the natural greenhouse effect. There is today an enhanced greenhouse effect with an additional radiative forcing, which has been brought on by human activities.[26] It is stated in AR4 that 'there is very high confidence that the global average net effect of human activities since 1750 has been one of warming, with a radiative forcing of +1.6 [+0.6 to 2.4] $W/m^{2'}$.[27]

Human activities have lead to emissions of four long-lifed greenhouse gases, namely carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$) and halocarbons (which is a group of gases that contains fluorine, chlorine or bromine). The global atmospheric concentrations of $CO_2$, $CH_4$ and $N_2O$ have increased considerably since 1750, and have now exceeded the pre-industrial values by far.[28] The most significant anthropogenic GHG is $CO_2$, which has had an annual emission growth at about 80 % between 1970 and 2004.[29]

[22] IPCC: *AR4: Climate Change 2007: Synthesis Report*, p. 33.
[23] IPCC: *AR4: Climate Change 2007: Synthesis Report*, p. 33.
[24] IPCC: *AR4: Climate Change 2007: Synthesis Report*, p. 37.
[25] Ruddiman, W. F. (2008) p. 336.
[26] Ruddiman, W. F. (2008) p. 336.
[27] IPCC: *AR4: Climate Change 2007: Synthesis Report*, p. 37.
[28] IPCC: *AR4: Climate Change 2007: Synthesis Report*, p. 37.
[29] IPCC: *AR4: Climate Change 2007: Synthesis Report*, p. 36.

**Table 2 -** Global average concentration levels of key green house gases and their changes over time

| | $CO_2$ | $CH_4$ | $N_20$ | CFC-11 | CFC-12 | $SF_6$ |
|---|---|---|---|---|---|---|
| 2005 level[30] | 379 ± 0.65 ppm | 1774 ± 1.8 ppb | 319 ± 0.12 ppb | 251 ± 0.36 ppt | 538 ± 0.18 ppt | 5.6 ± 0.038 ppt |
| Change relative to 1998 level[31] | + 13 ppm | + 11 ppb | + 5 ppb | - 13 ppt | + 4 ppt | +1.5 ppt |
| Pre-industrial level[32] | 278 ppm | 715 ppb | 270 ppb | 0 | 0 | 0 |
| 2005 radiative forcing ($W/m^2$)[33] | 1.66 | 0.48 | 0.116 | 0.063 | 0.17 | 0.0029 |
| Atmospheric lifetime (years) [34] | 5-200 | 12 | 114 | 45 | 100 | 3200 |

**Ppm** = parts per million **ppb =** parts per billion **ppt** = parts per trillion

The connection between the observed increase in anthropogenic greenhouse gases and most of the observed increase in global average temperature since the mid-20th century is 'very likely', as claimed by the IPCC Working Groups in AR4.[35] On the other hand, the reports of the IPCC has been opposed by some scientists, who *inter alia* disagree with the IPCC concerning the human responsibility.[36] However, the contradicting scientists are only a minority and it is safe to claim that there is almost universal consensus regarding the causation chain between anthropogenic GHG emissions and climate change.[37] That connection between anthropogenic activities and the enhancement of the natural greenhouse effect is furthermore expressed in the preamble to the United Nations Framework Convention on Climate Change (UNFCCC). An acknowledgement of the human factor by the parties to the UNFCCC is in addition expressed in Article 2, which expresses the ultimate objective of the Convention.

## 2.4 Sources and Emitters

The sources of greenhouse gas emissions are nearly uncountable since an exact account of the sources would have to account for every car, every cow

[30] IPCC: *AR4:* Working Group I Report: "The Physical Science Basis," p. 141.
[31] IPCC: *AR4:* Working Group I Report: "The Physical Science Basis," p. 141.
[32] IPCC: *AR4:* Working Group I Report: "The Physical Science Basis," p. 141.
[33] IPCC: *AR4:* Working Group I Report: "The Physical Science Basis," p. 141.
[34] IPCC: *TAR: Climate Change 2001: Synthesis Report*, p. 38.
[35] IPCC: *AR4: Climate Change 2007: Synthesis Report*, p. 39.
[36] Guruswamy, Lakshman D.: *International Environmental Law in a Nutshell*, St. Paul, 2003, p. 180 ff.
[37] Voigt, Christina: "State Responsibility for Climate Change Damages" *Nordic Journal of International Law*, vol. 77, 2008, p. 15.

and so forth.[38] However, $CO_2$, which has had a large emission growth, and has the largest radiative forcing effect, can be claimed to be the most significant anthropogenic GHG. The growth in anthropogenic GHG emissions between 1970 and 2004 had its primary origin in energy supply, transport and industry, and the foremost source of $CO_2$ emissions has been the use of fossil fuels.[39]

The table below lists the 20 largest emitters of $CO_2$ based on net emissions of carbon from fossil fuels. States are obliged to report their estimated net emission through the UNFCCC for the base year 1990 and continuing.[40] As for emissions made prior to 1990, various data sets exist which can be used to calculate past emissions.[41]

**Table 3 -** The 20 States that Emit the Most Carbon from Fossil Fuels

| | 1900-1999 | | 1999 | |
|---|---|---|---|---|
| **Country/Region** | **Total Emission in Millions of Tons of $CO_2$** | **Percent of Total** | **Total Emission in Millions of Tons of $CO_2$** | **Emissions per Capita (tons)** |
| United States | 77 320 | 30.3% | 1 520 | 5.6 |
| *European Union* | *56 280* | *22.1%* | *915* | *2.4* |
| Russia | 22 721 | 8.9% | 400 | 2.7 |
| Germany | 18 644 | 7.3% | 230 | 2.8 |
| China | 17 786 | 7.0% | 669 | 0.5 |
| United Kingdom | 14 336 | 5.6% | 152 | 2.6 |
| Japan | 9 360 | 3.7% | 307 | 2.4 |
| France | 7 241 | 2.8% | 109 | 1.8 |
| Ukraine | 5 981 | 2.3% | 104 | 2.1 |
| Canada | 5 831 | 2.3% | 151 | 4.9 |
| Poland | 5 198 | 2.0% | 85 | 2.2 |
| India | 5 098 | 2.0% | 243 | 0.2 |
| Italy | 4 189 | 1.6% | 121 | 2.1 |
| South Africa | 3 153 | 1.2% | 99 | 2.2 |
| Australia | 2 736 | 1.1% | 94 | 5.0 |
| Czech Republic | 2 565 | 1.0% | 29 | 2.8 |
| Mexico | 2 529 | 1.0% | 101 | 1.0 |
| Belgium | 2 426 | 1.0% | 38 | 3.7 |
| Netherlands | 2 331 | 0.9% | 64 | 4.1 |
| Spain | 2 288 | 0.9% | 82 | 2.1 |

*Source: World Resource Institute: Contributions to Global Warming – Map versions and related tables*

[38] Verheyen, Roda: *Climate Change Damage and International Law – Prevention Duties and State Responsibility*, 2005, p. 39.
[39] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 36.
[40] UNFCCC Arts. 4 (1) (j) and 12 (1).
[41] Verheyen, R. (2005) p. 39.

## 2.5 Predicted Impacts

There are impacts of climate change, as accounted for above, which can be observed and measured today. It is inevitable that there will be further impacts in the future, even if all thinkable measures are taken to mitigate and adapt to climate change as it occurs, and even if the concentrations of GHGs are stabilised, due to the time scale of climate processes and the feedbacks.[42] Measures can, on the other hand, affect the timing of future impacts, and some of them might be avoidable or lessened in extent. The future scenario of climate change and its impacts depends on the paths taken by demographic, economic and technological development and the commitment of the global community. The projections in AR4 are divided into four different scenario families (A1, A2, B1 and B2), which are presented and described in the *IPCC Special Report on Emissions Scenarios* (SRES, 2000). The four different SRES scenarios apply a 'wide range of the main demographic, economic, and technological driving forces of GHG and sulphur emissions and are representative of the literature'.[43] The table below lists the different outcomes for temperature change and sea level rise according to the different scenarios.

**Table 4** - Projected global average surface warming and sea level rise at the end of the 21st century

| Case | Temperature change (ºC at 2090-2099 relative to 1980-1999) | | Sea level rise (m at 2090-2099 relative to 1980-1999) |
|---|---|---|---|
| | Best estimate | *Likely* range | Model-based range excluding future rapid dynamical changes in ice flow |
| **Constant year 2000 concentrations** | 0.6 | 0.3-0.9 | Not available |
| **B1 scenario** | 1.8 | 1.1-2.9 | 0.18-0.38 |
| **A1T scenario** | 2.4 | 1.4-3.8 | 0.20-0.45 |
| **B2 scenario** | 2.4 | 1.4-3.8 | 0.20-0.43 |
| **A1B scenario** | 2.8 | 1.7-4.4 | 0.21-0.48 |
| **A2 scenario** | 3.4 | 2.0-5.4 | 0.23-0.51 |
| **A1FI scenario** | 4.0 | 2.4-6.4 | 0.26-0.59 |

*Source: IPCC: AR4: Climate* Change *2007: Synthesis Report p. 45.*

[42] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 46.

[43] IPCC: *Special Report on Emissions Scenarios; SRES 2000 – Summary for Policy Makers* p. 3.

Regardless of scenario, the projected warming of the 21st century will show geographical patterns similar to those observed in recent time. The areas covered with snow are predicted to diminish and so will the sea ice in both the Arctic and the Antarctic. Hot extremes and heat waves are 'very likely' to become more frequently apparent. It is furthermore 'very likely' that there will be an increase in precipitation in high-latitudes and it is 'likely' that there will be a decrease in precipitation in most subtropical land regions.[44]

The key findings for the impacts of climate change over the 21st century include an increased risk of extinction for approximately 20 to 30 % of plant and animal species, if the increase in global average temperature oversteps 1.5 to 2.5 ºC. As for the food sector, the prediction is that there will be a slight increase in crop productivity at mid- to high latitudes, while lower latitudes; seasonally dry and tropical regions in particular, are projected to see a decrease in crop productivity, which would cause an increased risk of hunger. It is furthermore projected that by the 2080's, several millions more will be affected by floods every year than today due to the rise in sea level. Most of the people affected by floods will be among those residing in the densely populated and low-lying mega deltas of Asia and Africa. The populations of small islands will be particularly vulnerable. The areas that are predicted to be affected by flooding are in addition often areas with industries, settlements and societies that are most vulnerable already as they are, and they are also often linked to climate-sensitive resources.[45]

Climate change will, furthermore, affect the health status of millions of people. Some of the effects will be positive; such as fewer deaths from cold exposure and changes in range of malaria, but the overall expected negative effects will outweigh the positive effects. The negative effects will be predominant in developing countries in particular, where the expected negative health effects include malnutrition and deaths due to extreme weathers.[46]

## 2.6 Conclusions

It has been established in this chapter that human activities influence the climate system and that the effect has been one of warming. It has furthermore been established that the warming of the climate system causes damage and that it will cause additional damage in the future irrespective of which path is taken. It has also been established that some States have contributed more, by far, to the making of anthropogenic climate change and that many of the most severe predicted impacts will strike on others than those predominantly responsible. The poor communities, which have added only insignificantly to the problem, are to suffer dire consequences from climate change, partly because of the strain they are already under, but

[44] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 46.
[45] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 48.
[46] IPCC: *AR4: Climate Change 2007: Synthesis Report* p. 46.

partly because of the uneven way in which climate change will manifest itself.

# 3 The Climate Change Regime

The issue of climate change was first brought to the agenda of the United Nations in 1988 by the Government of Malta. The Maltese proposal was that the United Nations General Assembly (UNGA) addressed the topic of 'Conservation of climate as part of the common heritage of mankind' in a declaration.[47] The General Assembly then addressed climate change in resolution 43/53 in 1988, in which climate change was recognized as a 'common concern of mankind' and as an issue that calls for 'timely action'. The need for international collaboration on effective measures within a global framework was recognized in resolution 44/207 in 1989. It was further noted in the same resolution that the largest current green house gas emissions had its origin in developed countries, which therefore had the main responsibility in combating the emissions.

## 3.1 The UNFCCC

The United Nations Framework Convention on Climate Change (UNFCCC) was developed and adopted in connection with the United Nations Conference on Environment and Development (UNCED), or the Earth Summit, which was held in Rio in 1992. The UNFCCC entered into force on 21 March 1994, 90 days after obtaining 50 ratifications.[48] The Convention was negotiated by consensus and was intended for universal participation.[49] Since the Convention has as many parties as there are members of the United Nations, this intention may well be claimed to have been fulfilled.[50] However, the quest for universal participation reveals itself in the Convention, which can be understood as the lowest common denominator of the negotiating States.[51]

The difference of opinion among the negotiating States is an expression of the different connotations of climate change and its mitigation. While the Association of Small Island States, which stand the risk of disappearing due to sea level rise, argued for a strong convention, oil producing States, whose economies are depending on the consumption of fossil fuels, were of a different opinion. There was, in addition, the interest

[47] Churchill, Robin & Freestone, David (Ed.s): *International Law and Global Climate Change*, London, 1991, p. 2.
[48] In accordance with Art 23 of the UNFCCC.
[49] Birnie, Patricia W. & Boyle, Alan E., International Law & the Environment, Oxford, 2002, p. 523.
[50] List of members of the UN:
http://www.un.org/members/list.shtml
List of parties to the UNFCCC:
http://untreaty.un.org/ENGLISH/bible/englishinternetbible/partI/chapterXXVII/treaty32.asp (2008-09-23, 19:40)
[51] Birnie, P. W. & Boyle, A. E. (2002) p. 523.

of the larger developing States and some already developed States, whose primary concern was to not hinder their own economic progress.[52]

The negotiation of the UNFCCC was also obstructed by the complexity of climate change. While the central intention behind the Convention was to cover the actual topic of climate change, the complexity of the issue meant that the Convention had to address a wide range of related topics. Both sources of GHG emissions and carbon sinks had to be covered, which in turn are strongly connected with the energy supply, transport, and industry in all developed States and in many developing States. The protection of carbon sinks is also associated with protection of natural habitats and ecosystems, sovereignty over natural resources, and deforestation. The traditional sectoral approach of international regulation of the environment would consequently be inadequate in the context of climate change. Another implication consistent with the complexity of the issue is the significant financial implications of successful climate change mitigation.[53]

### 3.1.1 Objective

The ultimate objective of the UNFCCC and related instruments is, as laid down in Article 2, to:

*...achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.*

As pointed out by *Birnie* and *Boyle*, the objective of the Convention is to *stabilize* the GHG emissions at a non-threatening level, rather than to reverse the emissions.[54] Since the Convention does not contain a definition of what a non-threatening level might be, nor of the time frame referred to in Article 2, it makes for a weak and narrow objective. On the other hand, it has been argued by *Christina Voigt* that the objective of the Convention is to *prevent* dangerous interference, which according to science and legal standards would be the same as to prevent an increase in the average temperature of 2 °C compared to pre-industrial levels.[55] The notion that the objective's emphasis is on prevention rather than stabilisation is supported by *Sands*, who states that the primary objective of the Convention is climate change prevention.[56]

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[52] Birnie, P. W. & Boyle, A. E. (2002) p. 523 f.
[53] Birnie, P. W. & Boyle, A. E. (2002) p. 523.
[54] Birnie, P. W. & Boyle, A. E. (2002) p. 524.
[55] Voigt, C. (2008) p. 5 f.
[56] Sands, Philippe: *Principles of International Environmental Law*, Cambridge, 2003, p. 361.

### 3.1.2 Defintions

The international legal definitions of damage to air and atmosphere have been formulated differently compared to definitions of more general pollution.[57] The substances that cause harm to air and atmosphere need not to be harmful *per se* - they might instead trigger reactions.[58] Similarly, it is not the actual GHG emissions that cause sea level rise and desertification, they do however lead to increased atmospheric concentration levels, which then changes the atmosphere's ability to scatter and trap solar radiation, and so forth. Therefore, the UNFCCC holds no expressed definition of climate change damage: it only provides for a definition of *adverse effects* from climate change, since the focus is placed on the effect, rather than the causality with the actual act causing it.[59] This definition of adverse effects cannot be used interchangeably with the more general definition of environmental damage.[60] It can, however, be used as a tool when determining the threshold value at which liability is triggered.[61] The threshold of damage, at which the damage is included under the UNFCCC, is thus changes that have *significant deleterious effects*.

### 3.1.3 Commitments

The considerable challenges presented by the differentiated opinions of the participating States, the scientific uncertainties, and the complex nature of the topic lead to the creation of a framework convention, rather than a detailed regime.[62] Thus, the rights and obligations of the Parties to the Convention have, to a large extent, been left to the States to define further. This lack of specified rights and obligations has lead to accusations that the UNFCCC solely expresses the international community's common vision and goals.[63] The commitments provided for by the Convention are expressed in equivocal wordings, so as to form a compromise between the views of the negotiating States, making the scope of the commitments unclear.[64]

The central commitments under the UNFCCC are established in Article 4 and differ in extent between the Parties. A provision of particular interest in this context is found in Article 4.4, in accordance to which the developed country Parties and other Parties listed in Annex II are obliged to 'assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those

[57] Larsson, Marie-Louise: *The Law of Environmental Damage – Liability and Reparation*, Stockholm, 1999, p. 138.
[58] Larsson, M-L. (1999) p. 138.
[59] Larsson, M-L. (1999) p. 138 f.
[60] Sands, P. (2003) p. 877.
[61] Sands, P. (2003) p. 877.
[62] Birnie, P. W. & Boyle, A. E. (2002) p. 524.
[63] Voigt, C. (2008) p. 5.
[64] Sands, P. (2003) p. 364.

adverse effects'. Adverse effects of climate change are defined in Article 1.1 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.*

Another provision of interest is Article 4.2, which states that the developed country Parties and other Parties included in Annex I commit themselves to:

*adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs.*

This provision can be interpreted as pertaining a substantial obligation for Annex I Parties to reduce their GHG emissions.[65] However, the provision is expressed in the same vague wording as other commitments and it does not require a return to a specific earlier emission level at a specific date.[66]

### 3.1.4 Principles

General principles are included in both the Preamble of the Convention and in Article 3. The use of 'Principles' as the heading of Article 3 proved to be controversial, and it was the subject of heavy debate at the meetings of the Intergovernmental Negotiation Committee (INC).[67] In their discussions, some States asserted that principles were preferably included only in the Preamble of the Convention, due to their open-ended legal implications.[68] Other States argued that principles, if included in the body of the text, would be better equipped to provide guidance in the implementation and the development of the Convention itself instead of being limited to guidance of policymaking.[69]

The level of adherence required by the Parties to the listed principles is worded as 'should' throughout Article 3. This may well imply a non-binding legal status, but the principles will nonetheless be relevant for interpretation, implementation, and the development of related instruments.[70] The principles have furthermore been claimed to have the additional function as 'the parameters' in accordance to which the variables,

[65] Voigt, C. (2008) p. 6.
[66] Sands, P. (2003) p. 365.
[67] Verheyen, R. (2005) p. 67.
[68] Yamin, Farhana & Depledge Joanna: *The International Climate Change Regime – A guide to Rules, Institutions and Procedures*, Cambridge, 2004, p. 66.
[69] Yamin, F. & Depledge, J. (2004) p. 66.
[70] Birnie, P. W. & Boyle, A. E. (2002) p. 525.

which would be the work of the Parties towards achieving the objective of the Convention, are to be set.[71]

The principles set out in Article 3 include those of inter-generational equity, common but differentiated responsibilities, the precautionary principle, and the right of all Parties to sustainable development. It is also stated that all Parties should cooperate in promoting and supporting an open international economic system. Furthermore, Article 3 allows the Parties to be guided by additional principles not explicitly mentioned in the Article, by stating that the principles that are to give guidance include *inter alia* those listed in the Article. It is thus recognized implicitly that other principles of international law might be applicable.[72]

The concerns of the developing countries are at the central view of this provision. On the other hand, it is possible that the following passage:

*The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given consideration.*

will be interpreted as allowing for special treatment of States that are heavily dependent on oil production, such as the United States and Saudi Arabia.[73] The concerns of oil dependent economies are given further attention in Article 4.8.

## 3.2 The Kyoto Protocol

The first Conference of the Parties (COP-1), which was held in Berlin in 1995, determined that the commitments established in Article 4.2.a and b were inadequate. It was therefore decided that the commitments of the Annex I Parties were to be strengthen through the adoption of a protocol, or another legal instrument.[74] The aim of the process was *inter alia* to:

- elaborate policies and measures, as well as
- set quantified limitation and reduction objectives within specified time-frames, such as 2005, 2010 and 2020, for their anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol. [75]

[71] Birnie, P. W. & Boyle, A. E. (2002) p. 525.
[72] Yamin, F. & Depledge, J. (2004) p. 66.
[73] Birnie, P. W. & Boyle, A. E. (2002) p. 525.
[74] Sands, P. (2003) p. 369.
[75] Decision 1/CP.1, Report of the Conference of the Parties on its first Session, Berlin, 28 March-7 April 1995, FCCC/CP/1995/7/Add.1.

With starting-point in the 'Berlin Mandate', the negotiations of the fortified commitments commenced. The Kyoto Protocol was then adopted at COP-3 in December 1997 and entered into force on February 16 2005.

### 3.2.1 Commitments

The most important accomplishment of the Kyoto Protocol was the imposing of emission limits for six greenhouse gases on developed States as listed in Annex B.[76] The six covered greenhouse gases are carbon dioxide, methane, nitrous oxide, hydroflurocarbons, perflourcarbons, and sulphur hexafluoride. The aim of the emission limits is to ensure a 5 per cent reduction of the overall emissions from Annex I States relative to the 1990 levels. This reduction is to be achieved within the timeframe 2008 to 2012, which is the first commitment period.[77]

The listed States have individual reduction levels set in accordance with Article 4.2.a of the Convention. The individual limit is set based on the particular circumstances of the State, *e.g.* ability to reduce emissions, access to clean technology, and use of energy. The listed emission reduction targets for the first commitment period in Annex B include:

- The European Union -8 per cent
- The United States -7 per cent
- Canada and Japan -6 per cent
- New Zealand and Russia 0
- Norway +1 per cent
- Australia +8 per cent
- Iceland + 10 per cent

The use of 'multiyear' commitment periods was created to give the Parties more flexibility in meeting their reduction targets.[78] Commitments for following periods will, according to Article 3.7 of the Protocol, be established through amendments to Annex B. The procedure for the adoption of the amendments is regulated in Article 20.

Article 2 of the Kyoto Protocol holds a list of policies and measures, which parties should implement in order to achieve their quantified reduction targets. While the European Union had opted for mandatory and co-ordinated policies and measures, the United States, Canada, Australia, and some other Annex I parties preferred a more flexible line of action.[79] The policies and measures prescribed for in Article 2 are thus not mandatory, and are to be implemented in accordance with national circumstances.

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[76] Birnie, P. W. & Boyle, A. E. (2002) p. 526.
[77] The 1997 Kyoto Protocol, Article 3.1.
[78] Richardson, Benjamin J.: "Kyoto Protocol to the United Nations Framework Convention on Climate Change", *New Zealand Journal of Environmental Law*, vol. 2, 1998, pp. 249-262, p. 253.
[79] Sands, P. (2003) p. 372.

It should however be noted that the United States has not yet ratified the Protocol (January 10, 2009).

### 3.2.2 Joint Implementation of Commitments

The advancements made to the climate change regime by the adoption of the Protocol are, on the other hand, not solely based on the introduction of legally binding emission reduction targets and other measures, but also thanks to the inclusion of mechanisms for joint implementation of these commitments.[80] One of these mechanisms is the Clean Development Mechanism (CDM), which is defined in Article 12. The CDM enables Annex B parties to gain emission reduction credits by investing in emission reduction projects in non Annex I parties.

Parties listed in Annex B are furthermore able to trade emission reduction credits for the purpose of fulfilling their commitments under Article 3. A State can thus obtain emission quotas from another Party, and thereby increase its allowed level of emission. The purchase of emission quotas can sometimes be more cost-effective than to take domestic measures to reduce emissions. This was a controversial aspect of the Protocol, which was strongly advocated by the United States and equally strongly opposed by a number of parties.[81]

## 3.3 Compliance

Parties of the Convention shall, in the event of a contingent dispute regarding the interpretation or application of the Convention, seek settlement of the dispute through negotiation or any other peaceful method according to Article 14. Parties may, in conjunction with their ratification, approval, acceptance, or accession to the Convention; or at any time thereafter, declare that any dispute regarding the interpretation or application of the Convention between that Party and any other Party, accepting the same obligation, shall be submitted to the International Court of Justice (Art. 14.2.a). The same rules apply to conflicts concerning the interpretation or application of the Kyoto Protocol, as it is stipulated in Article 18 that 'the provisions of Article 14 of the Convention on settlement of disputes shall apply, mutatis mutandi, to this Protocol'. That Article 14 applies to any related instruments is furthermore expressed in the Convention itself in Article 14 paragraph 8.

Article 13 of the Convention urges COP to consider the establishment of a multilateral consultative process (MCP) for the resolution of questions regarding the implementation of the Convention at its first session. The adoption of an MCP was however postponed due to parallel negotiations on the Kyoto Protocol. The MCP would namely have had to have a different design if the Parties had agreed to binding reduction targets

[80] Birnie, P. W. & Boyle, A. E. (2002) p. 526 f.
[81] Sands, P. (2003) p. 372 f.

and these had been added to the Convention through an amendment, than if these were to be adopted in a Protocol. After the adoption of the Kyoto Protocol, the Parties shifted their focus to the establishment of a non-compliance mechanism under the Protocol, rather than under the Convention and there are now no dedicated procedures available for the COP to apply to individual cases of non-compliance to the Convention.[82]

The objective of the compliance procedure established under the Kyoto Protocol was to 'facilitate, promote and enforce compliance with the commitments under the Protocol'. It consists of a compliance committee, which has two branches: one facilitative branch and one for enforcement. The purpose of the facilitative branch is to provide assistance and advice to Parties in order to promote compliance.[83]

The enforcement branch is responsible for determining whether an Annex I Party is failing to comply with its quantified emission limitation or reduction commitments under Article 3, the methodological and reporting requirements for GHG inventories under Articles 5.1, 5.2, 7.1, and 7.4, and the eligibility requirements for the flexibility mechanisms under Articles 6, 12, and 17.[84] After the annual review of their emission inventories, Annex I Parties have 100 days to make up for any shortcomings, which can be made by acquiring AAUs, CERs, ERUs or RMUs through emission trading.[85] If the enforcement branch determines that a Party has not complied with its emission targets, it must declare that the Party is in non-compliance and require the Party to make up for the emissions exceeding its targets.[86] The offending Party will also have its assigned amount decreased with a third for the second commitment period.[87] The enforcement branch should furthermore require the non-compliant Party to submit a compliance action plan and suspend the eligibility of the Party to make transfers under emission tradings until the Party is reinstated.[88]

## 3.4 Assessment of the Climate Change Regime

The current approach by international law to environmental issues focuses on international co-operation rather than on international responsibility.[89]

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[82] Verheyen, R. (2005) p. 385 f.
[83] Decision 27/CMP.1 – *Procedures and mechanisms relating to compliance under the Kytoto Protocol*.
[84] Decision 27/CMP.1 – *Procedures and mechanisms relating to compliance under the Kytoto Protocol*.
[85] UNFCCC webpage: http://unfccc.int/kyoto_protocol/compliance/introduction/items/3024.php (2009-01-11, 9:00 p.m.).
[86] Decision 27/CMP.1 – *Procedures and mechanisms relating to compliance under the Kytoto Protocol*.
[87] Decision 27/CMP.1 – *Procedures and mechanisms relating to compliance under the Kytoto Protocol*.
[88] Decision 27/CMP.1 – *Procedures and mechanisms relating to compliance under the Kytoto Protocol*.
[89] Shaw, Malcolm N.: *International Law*, Cambridge, 2003, p. 771.

In many ways this represents a much more functional approach than that of bilateral responsibility - mainly since a successful protection of the environment is a matter of global concern, which also requires pre-emptive measures and not only response to actual damage.

The UNFCCC does not hold a provision dealing with the consequences of State activities that cause harm to the environment.[90] Some States presented requests for such provisions during the negotiation of the Convention.[91] These requests were left un-answered as the negotiating Parties decided to focus on mitigation of climate change, instead of responsibility and compensation.[92] Therefore, the Convention contains no acknowledgement of the industrialized States responsibility to compensate other States for the harm caused by GHG emissions beyond the vague commitment in Article 4.4.[93]

The Parties listed in Annex II and the EC are, under Article 4.4, obliged to 'assist the developing country Parties that are particularly vulnerable to the adverse effects from climate change in meeting costs of adaptation to those adverse effects'. This provision might not be an acceptance of traditional liability under the State responsibility regime, but it expresses an acknowledgement of a financial responsibility as such.[94] It was additionally declared by some States upon the signing of the UNFCCC, that the Convention should not rule out the application of the general law on State responsibility. One example thereof is the declaration made by the Government of Fiji upon its signature of the Convention, which states that:

*The Government of Fiji declares its understanding that signature of the Convention shall, in no way, constitute a renunciation of any rights under international law concerning state responsibility for the adverse effects of climate change, and that no provisions in the Convention can be interpreted as derogating from the principles of general international law.*[95]

The decision not to adopt a multilateral consultative process under the UNFCCC was mainly based on the assumption that there was going to be global participation of the Kyoto Protocol.[96] However, at today's date this is not the case. The effect of this decision is thus that there is no dedicated procedure in place to hold non-Kyoto protocol parties to account for non-compliance with the Convention.[97] Since most of the commitments under the Convention and the Protocol apply only to developed State parties, there is also the risk that emissions from developing States, such as

[90] Sands, P. (2003) p. 900.
[91] Sands, P. (2003) p. 900.
[92] Voigt, C. (2008) p. 4.
[93] Birnie, P. W. & Boyle, A. E. (2002) p. 531.
[94] Sands, P. (2003) p. 901.
[95] UN Treaty Collection: http://untreaty.un.org/sample/EnglishInternetBible/partI/chapterXXVII/treaty21.asp (2008-10-15, 3.15 pm).
[96] Yamin, F. & Depledge, J. (2004) p. 389.
[97] Yamin, F. & Depledge, J. (2004) p. 389.

Brazil, China, and India, will increase beyond those of the OECD States as they continue to industrialize.[98]

What is more, the adopted Protocol falls short of the ambitions set by the 'Berlin mandate'.[99] The negotiating process, which was initiated with the 'Berlin mandate', was aimed to be carried out 'in the light of the best scientific information and assessment on climate change and its impacts, including the reports of the International Panel on Climate Change'.[100] If the reduction targets of the Kyoto Protocol had been set in accordance with the reports of the IPCC there would have been far deeper cuts.[101] Instead, the Kyoto Protocol aims at achieving a 5 per cent reduction of the overall emissions from Annex I States relative to the 1990 levels.

[98] Birnie, P. W. & Boyle, A. E. (2002) p. 533.
[99] Richardson, B. J. (1998) p. 251.
[100] Decision 1/CP.1, Report of the Conference of the Parties on its first Session, Berlin, 28 March-7 April 1995, FCCC/CP/1995/7/Add.1.
[101] Richardson, B. J. (1998) p. 258.

# 4 State Responsibility

One of the fundamental principles of international law is that States must not harm or violate the rights of other States.[102] The invasion of a legal person into the legal interest of another will in international law, as in other legal systems, create grounds for claims of responsibility.[103] States can thus be held responsible for violations of international law and be obliged to make reparation for the damage caused. This can be derived from the nature of international law and the concepts of State sovereignty and the equality of States.[104]

## 4.1 The ILC Draft Articles

The International Law Commission (ILC) was established as a subsidiary organ of the United Nations General Assembly (UNGA) with the objective to 'promote and progressively develop international law and its codification'.[105] The General Assembly then requested that the ILC codified the law on State responsibility in 1953.[106] This task led to the adoption of the ILC Draft Articles on the Responsibility of States for Internationally Wrongful Acts in August 2001. After noticing that the scope of these Articles could also include damages occurring from acts which are not prohibited under international law, but still of a risky nature, the ILC was furthermore given the task to develop the topic of 'International liability for injurious consequences arising out of acts not prohibited by international law' in 1977.[107]

The drafts of the ILC are not formally binding for any States. The UN General Assembly has on the other hand commended in resolution 56/83 that States give attention to the 2001 Articles on State responsibility, and annexed the articles to the resolution.[108] President Schwebel gave further emphasis to the weight of the 2001 ILC Articles in his speech to the UN General Assembly in 1997 when he, while referring to the decision in the *Gabčíkovo-Nagymaros Project* case, stated that the judgment:

*…is notable, moreover, because of the breadth and depth of the importance given in it to the work product of the International Law Commission. The Court's Judgment not only draws on treaties concluded pursuant to the Commission's proceedings - those on the law of treaties, of State succession*

[102] Tol, Richard S. J. & Verheyen, Roda: "State responsibility and compensation for climate change damages – a legal and economic assessment" *Energy Policy* (32, 2004) p. 1110.
[103] Brownlie, Ian: *Principles of Public International Law*, Oxford, 2008, p. 433.
[104] Shaw, M. N. (2003) p. 694.
[105] Statute of the International Law Commission, Art. 1.1.
[106] UNGA Res. 799 (VIII), 7 December 1953.
[107] UNGA Res. 32/151, 19 December 1977.
[108] UNGA Res. 56/83, 28 January 2002.
Due to this resolution, I will hereinafter refer to the ILC 2001 Draft Articles on State responsibility as just the 2001 ILC Articles.

*in respect of treaties, and the law of international watercourses. It gives great weight to some of the Commission's Draft Articles on State Responsibility, as did both Hungary and Slovakia. This is not wholly exceptional; it rather illustrates the fact that just as the judgments and opinions of the Court have influenced the work of the International Law Commission, so the work of the Commission may influence that of the Court.*[109]

The drafts of the ILC may form the basis of international treaties, are parts of state practice - which may lead to new rules of customary international law, and may even provide evidence of custom.[110] When issuing the Draft Articles on State Responsibility the task was to codify international law on the subject, but the ILC has also been given the task to progressively develop international law.[111] Most of the 2001 ILC Articles can, however, be derived from accepted sources of international law, especially regarding international custom as evidence of general practice accepted as law by States (ICJ Statute, Art. 38.1 (b)), general principles of law (ICJ Statute, Art. 38.1 (c)), and judicial decisions and teachings of publicists (ICJ Statute, Art. 38.1 (d)).[112] It may even be claimed that the general principles of international law that impose liability for internationally wrongful acts, and for adverse effects from lawful activities, are now reflected in the 2001 ILC Articles on the Responsibility of States for Internationally Wrongful Acts.[113]

## 4.2 The Internationally Wrongful Act of a State

The basic rule of State responsibility, as formulated by Mr. Ago (Rapporteur of the ILC), is that 'every internationally wrongful act by a State gives rise to international responsibility'.[114] This general rule is reflected in Article 1 of the 2001 ILC Articles, and it has been given wide recognition in practice. For example, the PCIJ affirmed in the *Phosphates in Morocco* case that international responsibility is established immediately if a State has committed an internationally wrongful act against another State.[115] The ICJ has also applied this rule on numerous occasions, such as in the *Corfu Channel* case and in the *Gabčíkovo-Nagymaros Project* case.

Since the application of State responsibility flows from an internationally wrongful act, it is necessary to examine the conditions,

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[109] Speech by Judge Stephen M. Schwebel on the report of the International Court of Justice: UN Doc. A/52/PV.36 (1997).
[110] Shaw, M. N. (2003) p. 113.
[111] Statute of the International Law Commission, Art. 1.1.
[112] Verheyen, R. (2005) p. 226.
[113] Sands, Philippe: *Principles of International Environmental Law*, 2003, p. 869.
[114] *Yrbk*., ILC, 1970, vol. II, p. 187; *Phosphates in Morocco*, Judgment, 1938, PCIJ, Series A/B No. 74, p. 28.
[115] *Yrbk*., ILC, 1970, vol. II, p. 187; *Phosphates in Morocco*, Judgment, 1938, PCIJ, Series A/B No. 74, p. 28.

which need to be fulfilled in order to characterize an act of a State as being internationally wrongful. These conditions can be divided into a subjective and an objective part; the subjective element addressing the imputability of the action to the State, and the objective element the failure of the State to fulfill an international obligation.[116] The elements of attribution and breach of obligation were clearly expressed by the PCIJ in the *Phosphates in Morocco* case, in which the Court linked the determining of international responsibility with the existence of an 'act being attributable to the State and described as contrary to the treaty right of another State'.[117] The essential elements of a wrongful act are furthermore expressed in Article 2 of the 2001 ILC Articles – subparagraph (a) corresponds to the subjective element, and subparagraph (b) to the objective element.

### 4.2.1 The Subjective Element of an Internationally Wrongful Act

The element generally referred to as the subjective element of an internationally wrongful act states that the conduct, for which responsibility is invoked, must be attributable to a State.[118] Since States are abstract legal persons, they cannot 'act' in the literal sense of the word.[119] The unlawful act must instead be imputable to States, which are the original and major subjects of international law.[120]

The attribution of conduct to a State depends on the link between the State and the individual or individuals who performed the unlawful act or omission.[121] The link that exists between an individual or a corporation and a State based on nationality, habitual residence or incorporation would in theory be sufficient to establish such a link.[122] However, this kind of approach is avoided in international law since it would broaden the responsibility of States far beyond conduct engaged by States as organisations, and since international law wishes to recognize the autonomy of persons acting on their own account.[123] The approach chosen instead is that the attribution of conduct to a State as a subject of international law is based on criteria determined by international law.[124] These criteria are expressed in chapter II of the 2001 ILC Articles on State Responsibility, which consists of eight cumulative and limitative Articles, which provides for the different basis of attribution.[125] The consequence of the limitative

[116] *Yrbk*., ILC, 1970, vol. II, p. 187; *Phosphates in Morocco*, Judgment, 1938, PCIJ, Series A/B No. 74, p. 28.
[117] *Yrbk*., ILC, 1970, vol. II, p. 187; *Phosphates in Morocco*, Judgment, 1938, PCIJ, Series A/B No. 74, p. 28.
[118] *Yrbk*., ILC, 1970, vol. II, p. 187; *Phosphates in Morocco*, Judgment, 1938, PCIJ, Series A/B No. 74, p. 28.
[119] Shaw, M. N. (2003) p. 701.
[120] Shaw, M. N. (2003) p. 242.
[121] Shaw, M. N. (2003) p. 701.
[122] Report of the ILC, UN doc. A/56/10, 2001, p. 38.
[123] Report of the ILC, UN doc. A/56/10, 2001, p. 38.
[124] Report of the ILC, UN doc. A/56/10, 2001, p. 38.
[125] Report of the ILC, UN doc. A/56/10, 2001, p. 39.

effect is that a State cannot be held responsible if the conduct is not covered by the Articles.[126]

The general rule on attribution, as prescribed for in Article 4, is that the conduct of any State organ shall be considered an act of that State. State practice contains, however, innumerable cases in which States have been held responsible for the acts of individuals.[127] The international responsibility of States for actions by private parties has in such cases generally been established based on the failure of the State to take appropriate steps to prevent or punish the act of the individual.[128] It is namely a consequence of the cumulative effect of the Articles in chapter II that a State may be responsible for the effects of the conduct of private parties, provided that it has failed to respond appropriately to prevent those effects.[129] It is therefore rather its omission to act that the State is held responsible for, than for the actual act of the individual. An example thereof is the *United States Diplomatic and Consular Staff in Tehran* case, where the Court held the Islamic Republic of Iran responsible for failure to take appropriate steps to protect the United States Embassy and its diplomatic and consular staff from the actions of the militant revolutionaries, not for the actual occupation of the Embassy and the taking of hostages itself.[130]

### 4.2.2 The Objective Element of an Internationally Wrongful Act

The objective element of an internationally wrongful act states that the conduct, for which international responsibility is invoked, must form a violation of an international obligation in force for the State in question.[131] The element can be expressed with a number of different phrases. The phrase used in Article 2 of the 2001 ILC Articles is 'action or omission [which] constitutes a breach of an international obligation of that State'. The notion 'breach of an obligation' has many times been equated with conduct opposing the rights of others.[132] This can be exemplified with the PCIJ judgment on the *Phosphates in Morocco* case, where the Court referred to an act, which is contrary to the right of another State.[133] In the *Rainbow Warrior* arbitration, the tribunal referred to 'any violation by a State of any obligation'.[134] Other terms that have been used in practice include 'breach of an engagement', 'violation of an international obligation', and 'acts incompatible with international obligations'.[135] The

[126] Report of the ILC, UN doc. A/56/10, 2001, p. 39.
[127] *Yrbk*., ILC, 1970, vol. II, p. 188.
[128] *Yrbk*., ILC, 1970, vol. II, p. 188.
[129] Report of the ILC, UN doc. A/56/10, 2001, p. 39.
[130] *United States Diplomatic and Consular Staff in Tehran case* (USA v. Iran), *Judgment, I.C.J. Reports 1980*, p. 3.
[131] Report of the ILC, UN doc. A/56/10, 2001, p. 34.
[132] Report of the ILC, UN doc. A/56/10, 2001, p. 35.
[133] *Phosphates in Morocco*, Judgment, 1938, PCIJ, Series A/B No. 74, p. 28.
[134] *Rainbow Warrior* arbitration (New Zealand/France) (1990) UNRIAA vol. XX part II pp 215-284.
[135] Report of the ILC, UN doc. A/56/10, 2001, p. 35.

meaning is essentially the same, regardless of the phrase employed.[136] The phrase preferred by the ILC in their work is, however, 'breach of an international obligation'.[137]

A breach of an international obligation may consist of both actions and omissions as expressed in Article 2 of the 2001 ILC Articles. An underlying reason is that it is not only positive actions, but also omissions, that can cause wrongfulness.[138] It can furthermore be difficult to separate the omission from other circumstances relevant to the affirming of responsibility.[139] In practice, the international responsibility of States has been invoked based on omissions as many times as based on actions.[140] A case in which the unlawful act of a State consisted of an omission is the *Corfu Channel* case, in which Albania was held responsible for the damage caused to two British destroyers when they struck mines in Albanian territorial waters, despite the mines not having been placed there by Albania.[141] The ICJ concluded that it was sufficient that Albania knew, or must have known, of the existence of the mines without alerting third States. Another example is the *United States Diplomatic and Consular Staff in Tehran* case, where the Islamic Republic of Iran, as previously mentioned, was held responsible for inaction consisting of the failure to take appropriate steps.[142] There are moreover cases in which international responsibility was based on a combination of an action and an omission.[143]

The obligation that has been breached must be of an international character, a criterion which can be deduced from Article 2(b) of the 2001 ILC Articles. It is therefore not sufficient for the breach to be a violation of the national law of the State concerned. The second implication of this requirement is that a State cannot escape the characterization of its conduct as being unlawful by claiming that it is consistent with its own laws.[144] State responsibility can consequently result exclusively from conduct in violation to international law and it cannot be avoided with national legislation.

Except from the distinction between national and international law there is no distinction as for the origin of the obligation, which has been breached.[145] Both breaches of treaties and breaches of other legal duties are namely covered by the notion of internationally wrongful acts.[146] The regime of State responsibility is of general application and is indifferent to the origin of the norm breached, nor does the regime distinguish between civil and criminal responsibility, as is the case in national legal systems.[147]

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[136] Report of the ILC, UN doc. A/56/10, 2001, p. 35.
[137] Report of the ILC, UN doc. A/56/10, 2001, p. 35.
[138] Report of the ILC, UN doc. A/56/10, 2001, p. 35.
[139] Report of the ILC, UN doc. A/56/10, 2001, p. 35.
[140] Report of the ILC, UN doc. A/56/10, 2001, p. 35.
[141] *Corfu Channel case* (United Kingdom v. Albania), *Judgment of April 9th*, 1949*, I.C.J. Reports 1949*, p. 4.
[142] *United States Diplomatic and Consular Staff in Tehran case* (USA v. Iran), *Judgment, I.C.J. Reports 1980*, p. 3.
[143] Report of the ILC, UN doc. A/56/10, 2001, p. 35
[144] Report of the ILC, UN doc. A/56/10, 2001, p. 36.
[145] 2001 ILC Draft Articles on State Responsibility, Art. 12.
[146] Brownlie, I. (2008) p. 435.
[147] Report of the ILC, UN doc. A/56/10, 2001, p. 55.

On the other hand, the origin of the obligation breached may affect the applicability of the general law on State responsibility. The 2001 ILC Articles on State Responsibility are generally applicable in the environmental field of international law to the extent they reflect customary law.[148] However, recourse to the general rules on State responsibility may be barred if the primary rule breached forms part of a specialized and self-contained regime.[149] The secondary rules of that regime would then have preference, based on them being *lex specialis*. This relationship between the specialized norms and the more general law is reflected in Article 55 of the 2001 ILC Articles. The general law on State responsibility would not be entirely cut-off because of the existence of a self-contained regime though, but would rather remain as a last resort source of enforcement of the primary obligation.[150]

The obligation must also be in force between the States concerned at the time the act occurs, as stated in Article 13 of the 2001 ILC Articles. A State can thus not be held responsible for breaching an obligation of treaty if the State has not ratified the treaty concerned. This provision is furthermore consistent with the idea of a guarantee against retrospective application, and it affirms that this notion applies to matters of State responsibility.[151] It should, however, not be interpreted as hindering evolutionary interpretations of treaty provisions, which is of a different matter and should be permissible in certain cases.[152] The ICJ stated, for example, in its judgment on the *Gabčíkovo-Nagymaros Project* case that new scientific insights and new norms must be taken into consideration.[153] This corresponds to the provision in Article 31 paragraph 3 (c) of the 1969 Vienna Convention on the Law of Treaties, which states that 'any relevant rules of international law applicable between the parties' shall be taken into account when interpreting treaty provisions.

In the end, whether or not there has been a breach of an international obligation hinge upon 'the precise terms of the obligation, its interpretation and application, taking into account its objective and purpose and the factors in the case'.[154]

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[148] Sands, P. (2003) p. 873.
[149] Simma, B. & Pulkowski, D.: "Of Planets and the Universe: Self-Contained Regimes in International Law" *European Journal of International Law*, vol. 17, no. 3, 2006, (pp. 483-529) p. 490 ff.
[150] Simma, B. & Pulkowski, D.: "Of Planets and the Universe: Self-Contained Regimes in International Law" *European Journal of International Law*, vol. 17, no. 3, 2006, (pp. 483-529) p. 529.
[151] Report of the ILC, UN doc. A/56/10, 2001, p. 57.
[152] Report of the ILC, UN doc. A/56/10, 2001, p. 59.
[153] *Gabčíkovo-Nagymaros Project case (Hungary/ Slovakia), Judgment, I.C.J. Reports 1997,* p. 7, para. 140.
[154] Report of the ILC, UN doc. A/56/10, 2001, p. 54.

## 4.3 Contents of the International Responsibilty of a State

As every internationally wrongful act of a State entails the international responsibility of that State, new international legal obligations arise out of an internationally wrongful act.[155] The first requirement in eliminating the consequences of an internationally wrongful act is cessation.[156] A State responsible of an internationally wrongful act is obliged to cease that act, if it is still in progress, and to give appropriate assurances and guarantees of non-repetition, if the circumstances so require.[157] The purpose of cessation is to put an end to the breach of the international obligation and to protect the continuing validity and effectiveness of the obligation breached.[158]

The State is furthermore required to make full reparation for the injury caused by the internationally wrongful act.[159] The requirement to make full reparation is well established.[160] It was, for example, held by the PCIJ in the *Factory at Chorzów* case that:

*It is a principle of international law, and even a general conception of law, that any breach of an engagement involves an obligation to make reparation. In Judgment No. 8 (1927) (PCIJ, Ser. A, No.9, 21)... the Court had already said that reparation was the indispensable complement of a failure to apply a convention, and there is no necessity for this to be stated in convention itself.*[161]

In the same judgment, the Court also stated that:

*The essential principle contained in the actual notion of an illegal act – a principle which seems to be established by international practice and in particular by the decisions of arbitral tribunals – is that reparation must, as far as possible, wipe-out all the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed. Restitution in kind, or, if this is not possible, payment of a sum corresponding to the value which a restitution in kind would bear; the award, if need be, of damages for loss sustained which would not be covered by restitution in kind or payment in place of it – such are the principles which should serve to determine the amount of compensation due for an act contrary to international law.*[162]

Full reparation shall, according to Article 34 of the 2001 ILC Articles, take the form of restitution, compensation and satisfaction; either separately or in combination. It is a legal principle that restitution has primacy over compensation, but it is in many situations either unavailable or

[155] Report of the ILC, UN doc. A/56/10, 2001, p. 86.
[156] Report of the ILC, UN doc. A/56/10, 2001, p. 89.
[157] 2001 ILC Draft Articles on State Responsibility, Art. 30.
[158] Report of the ILC, UN doc. A/56/10, 2001, p. 89.
[159] 2001 ILC Draft Articles on State Responsibility, Art. 31.
[160] Sands, P. (2003) p. 873.
[161] *Factory at Chorzów case, Merits, Judgment,* 1928, PCIJ, Ser. A, No. 17, at 47.
[162] *Factory at Chorzów case, Merits, Judgment,* 1928, PCIJ, Ser. A, No. 17, at 47.

inadequate.[163] It is the role of compensation to compensate for any gaps not filled in by reparation.[164] In fact, compensation is probably the most commonly sought form of reparation in international practice.[165] It was likewise affirmed by the ICJ in the *Gabčíkovo-Nagymaros Project* case that: 'It is a well-established rule of international law that an injured State is entitled to obtain compensation from the State which has committed an internationally wrongful act for the damage caused by it.'[166]

## 4.4 Compensable Damage

Compensation as a form of reparation does not concern punishment of the responsible State; it merely concerns the actual losses resulting from the internationally wrongful act. It generally consists of monetary payment, which is intended to counterbalance, as far as possible, the damage suffered by the injured State as a result of the breach. Establising whether the injury suffered can be allocated to the wrongful act is not only a historical or causal process, but in principle a legal process. The existence of a causal link between the act and the loss is a necessary prerequisite. Damage which is too indirect, remote, or consequential, would accordingly not warrant reparation. But in some cases there are other criterions, such as 'directness', 'foreseeability', or 'proximity'. There are in addition other factors which may be of relevance: such as whether State organs have caused the harm on purpose, or whether the harm was within the scope of the obligation breached. Whether or not certain injury is attributable to a wrongful act is thus largely dependant on the obligation breached.[167]

The notion of 'injury' is defined in Article 31 paragraph 2 of the 2001 ILC Articles and includes both material and moral damage.[168] The obligation to make compensation is, however, limited to financially assessable damage.[169] Compensable damage includes financially assessable damage to the property and personnel of the State, and reasonable expenditures for remedying or mitigating damage deriving from the internationally wrongful act.[170] It also includes damage suffered by its nationals, persons as well as companies.[171] Non-material injuries, which only theoretically can be evaluated in financial terms, can be addressed by means of satisfaction.[172]

In cases concerning threats of, or actual, damage to the environment, injured States have been awarded compensation in payment intended to reimburse the injured State for expenses 'reasonably incurred in

[163] Report of the ILC, UN doc. A/56/10, 2001, p. 99.
[164] Report of the ILC, UN doc. A/56/10, 2001, p. 99.
[165] Report of the ILC, UN doc. A/56/10, 2001, p. 99.
[166] *Gabčíkovo-Nagymaros Project case (Hungary/ Slovakia), Judgment, I.C.J. Reports 1997,* para. 152.
[167] Report of the ILC, UN doc. A/56/10, 2001, p. 92 f.
[168] Report of the ILC, UN doc. A/56/10, 2001, p. 92.
[169] Report of the ILC, UN doc. A/56/10, 2001, p. 99.
[170] Report of the ILC, UN doc. A/56/10, 2001, p. 99.
[171] Report of the ILC, UN doc. A/56/10, 2001, p. 99.
[172] Report of the ILC, UN doc. A/56/10, 2001, p. 99.

preventing or remedying pollution, or to providing compensation for a reduction in the value of polluted property'.[173] This was for instance the case in the *Trail Smelter* case, where the tribunal awarded compensation to the United States for damage to land and property caused by emissions from a Canadian smelter.[174] However in many cases, environmental damage will include damage, which cannot be compensated solely by clean-up costs or compensation for devaluation in property value.[175] Damage to what is sometimes referred to as 'non-use values,' such as loss in bio-diversity, is in principle compensable.[176] Such damage can on the other hand be difficult to quantify in financial terms.[177]

## 4.5 Applicability of State Responsibility to Climate Change Damages

If there is a self-contained specialized treaty law, it may preclude the applicability of general international law between the parties on the basis of the treaty law being *lex specialis*. The existing global treaties on the topic of climate change consist of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and the 1997 Kyoto Protocol. However, the UNFCCC is primarily concerned with mitigation of climate change and it fails to provide provisions on how climate change damages should be compensated. Since the UNFCCC does not contain secondary rules concerning consequences of breaches of primary rules, it is not what is known as a self-contained regime. The Kyoto Protocol and some other multilateral environmental agreements provide non-compliance mechanisms, but these are only concerned with sanctions for failure to meet certain obligations, such as reduction targets. They do not address the legal consequences for damages caused by climate change. Therefore, there is nothing in the UNFCCC or the Kyoto Protocol that precludes recourse to the general law on State responsibility with regard to climate change damages.[178]

There is in fact no single instrument in the environmental field that codifies the generally applicable international rules governing responsibility and liability.[179] In the absence of a more specialized regime, the 2001 ILC Articles on State Responsibility are applicable to treaty based and other rules of international environmental law to the extent they reflect customary law.[180] The applicability of State responsibility in the sphere of environmental damage has furthermore been affirmed by the ICJ in the *Gabčíkovo-Nagymaros Project* case.

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[173] Report of the ILC, UN doc. A/56/10, 2001, p. 101.
[174] *Trail Smelter Arbitration* (United States v. Canada) 16 April 1938, 11 March 1941; 3 RIAA 1907 (1941).
[175] Report of the ILC, UN doc. A/56/10, 2001, p. 101.
[176] Report of the ILC, UN doc. A/56/10, 2001, p. 101.
[177] Report of the ILC, UN doc. A/56/10, 2001, p. 101.
[178] Voigt, C. (2008) p. 3 f.
[179] Sands, P. (2003) p. 873.
[180] Sands, P. (2003) p. 873.

When looking at the possibility of claiming State responsibility for climate change damages, it should be noted that no pollution disaster in modern time has resulted in claims against the State concerned.[181] This includes Chernobyl, Sandoz and Amoco Cadiz, which all caused significant harm to other States.[182] Regarding Chernobyl, the causes of the inaction have been claimed to have been political reasons and legal uncertainty.[183] On the other hand, it has also been claimed by Brownlie that:

*States have not habitually claimed damages from another – except on behalf of their nationals. They have not set a money price on wrongs which do not involve damage to nationals.*[184]

The future impacts of climate change will on the other hand cause harm not only to the environment but also to the life, health and livelihood of many people. Setting a price on all the damages of climate change will be a difficult task. Nevertheless, since climate change damages will include severe damages to nationals, the reluctance of States to claim compensation for environmental damages in the past, is not an indicator of continued reluctance in the future.

## 4.6 Challenges in Using the State Responsibility Approach to Climate Change Damages

The law on State responsibility is fairly well developed in general, but it is ill equipped to address environmental damage.[185] There are certain characteristics of environmental damage, such as the often complex causal mechanisms behind it, and it often involving multiple and cumulative causation, which make environmental damage ill suited to traditional regime.[186] Climate change damage makes for no exception compared to other forms of environmental damage, but it rather explicates the need for additional development of rules for liability in the environmental sphere.

There are several challenges, which need to be addressed and overcome if the traditional regime on State responsibility is to be successfully applied to climate change damages. The two most obvious challenges are to identify the international obligation breached and to attribute the wrongful act to States, which are challenges that will be discussed in depth in the following chapters. There are, however, numerous other challenges involved due to the complex nature of climate change and environmental damage in general.

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[181] Birnie, P. W. & Boyle, A. E. (2002) p. 178.
[182] Birnie, P. W. & Boyle, A. E. (2002) p. 178.
[183] Voigt, C. (2008) p. 3.
[184] Brownlie, Ian: *System of the Law of Nations: State Responsibility (part I)*, Oxford, 1983 p. 31.
[185] Sands, P. (2003) p. 869.
[186] Brownlie, I. (2008) p. 277.

First, there will be challenges due to the multitude of actors that are involved in the causing of climate change. This large number of actors leads to several problems - one of which is whether it would be possible to invoke the responsibility of one, or several, States, when in fact all States have made GHG emissions. However, it is a fact that every internationally wrongful act of a State involves the international responsibility of that State under Article 1 of the ILC Articles, and this cannot therefore preclude that other States can be held responsible for the conduct at hand, or for the injury caused. A fundamental rule of international law is that 'each State is responsible for its own conduct in respect of its own obligations'.[187] Thus, the notion of 'international responsibility' in Article 1 covers the new relations that arise under international law from the internationally wrongful act of a State, regardless of the number of subjects of international law the acts extends to.[188] The multitude of actors and the multitude of injured are therefore no hindrance from claiming State responsibility from one, or several States within this aspect.

Another challenge that is linked to the multitude of actors appears if State responsibility was to be established for anthropogenic climate change. This multitude of actors would in such case cause a problem to the allocation of costs, as rightfully noted by *Voigt* in her article *State Responsibility for Climate Change Damages*. *Voigt* suggests that the costs could be shared either based on the percentage of contribution to total global emission, or apportioned in conformity with the principle of common but differentiated responsibilities.[189] The Greenhouse Development Rights (GDR) Framework, which has been devised by Stockholm Environment Institute (SEI) and EcoEquity, suggests a solution that combines cumulative CO2 emission per capita with GNP.[190] GDR can thus be seen as a combination of the solutions suggested by *Voigt*. The GDR Framework is now being presented to, and accepted by numerous States at the prospect of the upcoming UN Climate Change Conference in Copenhagen 2009.[191]

The multitude of emitters bring an additional problem to the fore, namely that the injured States have also emitted greenhouse gases to some extent and have thus contributed to the injury suffered. This matter has a more obvious solution to it as it is regulated in Article 39 of the 2001 ILC Articles - if the injured State wilfully, by negligence, or omission have contributed towards their own injury, it might affect the level of reparation the State is entitled to.[192] However, it does not exculpate the wrongful act.[193]

Secondly, the making of anthropogenic climate change involves complex causal mechanisms. Firstly, it will be difficult to separate the anthropogenically induced climate change from changes occurring from

[187] Report of the ILC, UN doc. A/56/10, 2001, p. 34.
[188] Report of the ILC, UN doc. A/56/10, 2001, p. 33.
[189] Voigt, C. (2008) p. 19 f.
[190] EcoEquity and SEI: *The Right to Development in a Climate Restrained World*, available at: http://www.ecoequity.org/GDRs/ (2008-10-28 3:40 p.m.)
[191] The claim has been confirmed by Robert Watt; Head of Communications at SEI, communication on Oct. 31, 2008.
[192] Report of the ILC, UN doc. A/56/10, 2001, p. 109 f.
[193] Voigt, C. (2008) p. 19.

natural variability.[194] Furthermore, it is not the emission of carbon dioxide and other greenhouse gases *per se* that cause damage, it only triggers a chain of events, which *then* cause climate change related damage. It will therefore be a challenge to establish a link between the emission of one State and the injury suffered by another.

The general causation, *i.e.* the link between GHG emissions and climate change, is, however, based on scientific proof. This topic does not need to be discussed further here, since there is almost universal consensus regarding the connection between anthropogenic GHG emissions and the current climate change and the topic has already been addressed in chapter 2. The link between a specific action and a specific injury, *i.e.* the specific causation, is on the other hand a more complicated matter.

Some legal scholars have presented the view that 'liability is only a feasible mechanism when damage is identifiable, traceable to a state of origin, and reasonably foreseeable by that state' in the context of long-range pollution.[195] GHG emissions might not fit in the definition of pollution, but it bears many likenesses, especially in terms of causation. If the presented view was to prevail, it would not be viable to address climate change damages through the State responsibility regime, since the possibility of identifying the injury to certain emissions is unrealistic. A test basing proof on probability, such as the 'but for test' or *condition sine qua non* test, which would usually be applied to establish causation, would here be of limited use.[196]

However, if claims for responsibility were to be precluded due to difficulties with establishing causation, it would undermine the objective of the primary rule.[197] The tribunals should therefore be able to award damages based upon 'probable and inferential evidence as well as direct and positive proof'.[198] International practice holds the example of the *Trail Smelter* case, in which the tribunal considered that it was sufficient that the damage was caused, to at least some extent by sulphur emission from the Canadian smelter.[199] This approach is supported by *Phoebe Okowa,* who claims that it ought to be possible to determine relative causal contribution of States based on emission data.[200] *Okowa* furthermore suggests as a *de lege ferenda* solution that courts should:

*take a broad view of causation, and in principle a state should be held responsible if on the facts it can be established that its conduct materially contributed to the damage suffered by the plaintiff, even if other factors and causal agents also enter into the equation*.

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[194] Yamin, F. & Depledge, J. (2004) p. 380.
[195] Schachter, Oscar: *International Law in Theory and Practice*, Dordrecht, 1991, p. 380.
[196] Okowa; Phoebe N.: State Responsibility for Transboundary Air Pollution in International Law, Oxford, 2002, p. 187., Voigt, C. (2008) p. 15.
[197] Okowa; P. N (2002) p. 187.
[198] Okowa; P. N (2002) p. 187.
[199] *Trail Smelter Arbitration* (United States v. Canada) 16 April 1938, 11 March 1941; 3 RIAA 1907 (1941).
[200] Okowa; P. N (2002) p. 186 (The argument is based on the work of the European Monitoring and Evaluation Programme; EMEP/MSC-W Reports 1/84, 1/88 and 1/89.).

This approach is also supported by *Voigt*, who argues that causation could be established based on the State's contribution to the making of anthropogenic climate change and that the size of its contribution will only matter when apportioning costs.[201]

Thirdly, climate change will bring harm, not only to property and health, but also to biological diversity and other purely environmental, or ecological values. The definition of injury employed in the 2001 ILC Articles includes 'any damage whether material or moral'. Thus, the damage caused by climate change ought to be covered by the injury definition. However, it will be difficult to estimate the non-material losses in financial terms by factual and objective standards.[202]

It is normally not particularly difficult to value privately own natural resources, since such estimations can be based on market values. Assessing the value of public property is much more difficult. One solution would be to try to put a value to the individuals' use of the commons, which would include putting a price tag to the possibility of going for a nature walk, fishing and skiing. This kind of valuation presupposes empirical evidence of the public opinion regarding the value of public resources. Furthermore, it could only include the services rendered by the natural resources toward human beings, not the services rendered to animals, *e.g.* nesting habitats and nutrition. It would neither be possible to compensate for unknown functions, or unique resources. The conclusion is thus that it is impossible to award full compensation for climate change damages, since ecological intrinsic values cannot be estimated in financial terms.[203]

[201] Voigt, C. (2008) p. 16.
[202] Voigt, C. (2008) p. 18 f.
[203] Larsson, M-L. (1999) p. 545 ff.

# 5 The No Harm-Rule

While States have sovereign rights over their own natural resources, this right must not be exercised in ways contrary to the rights of other States. It is a fundamental principle of international law that States must not harm or violate the rights of other States, as stated above in the chapter on State responsibility. In international environmental law this principle is captured in the so-called No Harm-rule. The essence of this rule is that States are responsible for not causing damage to the environment of other States, or to areas beyond the limits of their national jurisdiction.[204] That States are responsible for not conducting, or permitting activities contrary to the rights of others, and for the protection of the environment within their territory and in common spaces is also known as the principle of good neighbourliness.[205] It is furthermore captured in the maxim *sic utere tuo, ut alienum non laedas*.[206]

## 5.1 The Trail Smelter Arbitration

In the *Island of Palmas* case, the arbitrator noted that there is an obligation of all States 'to protect within the territory the rights of other states, in particular their right to integrity and inviolability in peace and war'.[207] The arbitral tribunal in the *Trail Smelter* arbitration later elaborated this obligation.[208] The arbitration concerned damages caused to the American State of Washington by noxious fumes from a Canadian smelter located in Trail, British Columbia. The actual responsibility of Canada for causing the damages had already been affirmed in an agreement between the two States. Four questions were referred to the tribunal, one of which was 'whether the Trail Smelter should be required to refrain from causing damage in the State of Washington in the future and, if so, to what extent?'[209] To this question, the Tribunal concluded:

*...that, under the principles of international law, as well as of the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the 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.*[210]

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[204] Sands, P. (2003) p. 235 ff.
[205] Birnie, P. W. & Boyle, A. E. (2002) p.104.
[206] Birnie, P. W. & Boyle, A. E. (2002) p.104.
[207] *Island of Palmas* case, (Netherlands/U.S.A.), 2 R.I.A.A. 829 (Permanent Court of Arbitration 1928), p. 839.
[208] Sands, P. (2003) p. 241.
[209] Art. III of the Arbitration Convention between the United States of America and the Dominion of Canada, signed April 15, 1935.
[210] *Trail Smelter Arbitration* (United States v. Canada) 16 April 1938, 11 March 1941; 3 RIAA 1907 (1941) p. 1965.

This passage has been much cited and it has been accepted as a rule of customary international law by most legal scholars.[211] On the other hand, the importance of the ruling has been played down by some who have pointed to its limited scope (*i.e.* that the tribunal did not address whether Canada was liable for causing the harm). However, when the ILA Committee on Legal Aspects to the Environment performed an examination of international practice, the Rapporteur's conclusion was that State practice was based on the rule in the *Trail Smelter* arbitration.[212] For example, the approach used in the *Trail Smelter* arbitration was confirmed by the ICJ in the *Corfu Channel* case, when it noted that it is 'every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States'.[213] Furthermore, the tribunal asserted the obligation of States to consider the rights and interests of others when exercising its rights in the *Lac Lanoux* arbitration.[214] Judge de Castro also cited the rule formulated in the *Trail Smelter* arbitration in his dissenting opinion in the *Nuclear Tests* case.[215] The ICJ substantiated the legal status of the rule in its *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons* when the Court noted that:

*The existence of 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 a part of the corpus of international law relating to the environment.*[216]

## 5.2 The 1972 Stockhom Declaration

The Stockholm Declaration was adopted at the 1972 Stockholm Conference on the Human Environment with the intention to 'inspire and guide the peoples of the world in the preservation and enhancement of the human environment'. The overall legal status of the instrument is still uncertain.[217] However, it is often referred to or quoted in later treaties, documents, and agreements and recognized as State practice and soft law.[218]

The key normative provision of the declaration is Principle 21.[219] The provision reads as follows:

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[211] Sands, P. (2003) p. 241 f.
[212] International Law Association: *Report of the Committee on Legal Aspects of the Environment*, 60th Conference Report, 157, p. 163.
[213] *Corfu Channel case* (United Kingdom v. Albania), Judgment of April 9th, 1949, I.C.J. Reports 1949, 4, p. 22.
[214] *Affair du Lac Lanoux* 12 R.I.A.A. 281 (Nov. 16, 1957) p. 316.
[215] *Nuclear Tests* cases, (Australia v. France), I.C.J. Reports 1974, p 253, at p. 389.
[216] *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons*, I.C.J. Reports 1996, 226, para. 29.
[217] Birnie, P. W. & Boyle, A. E. (2002) p. 39.
[218] Larsson, M-L. (1999) p. 55.
[219] Birnie, P. W. & Boyle, A. E. (2002) p. 39.

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

In 1997, the UN General assembly adopted resolution 2996, which states that Principles 21 and 22 of the Stockholm Declaration 'lay down the basic rules' in regard to the environment. Principle 21 includes two of the fundamental objectives in international environmental law.[220] The first element establishes that States have sovereign rights over their natural resource. The principle captured in the second element of Principle 21 is the No Harm-rule. This formulation of the No Harm-rule is innovative compared to previous formulations of the rule, since it includes not only the territory of others, but also areas beyond the limits of national jurisdiction.[221] Principle 21 has been influential on later development of law and practice in the environmental field.[222] The normative character of the provision has been recognized, for example in Articles 192-4 of the 1982 UNCLOS, and in the 1992 Convention on the Transboundary Effects of Industrial Accidents.

## 5.3 The 1992 Rio Declaration

Like the Stockholm Declaration, the Rio Declaration it is not formally binding, but

*...its adoption by consensus of 176 states, after a prolonged negotiation process, and its normative character, make it a particularly important example of the use of soft law instruments in the process of codification and development of international law*.[223]

The Declaration is partly a restatement of existing, or developing, customary principles of international environmental law, and a statement of policy measures more thoroughly described in Agenda 21. It consists of twenty-seven principles, which is more or less a 'package deal' that must be read as a unit.[224]

The primary concern of the 1992 Rio Declaration on the Environment and Development is sustainable development and the global environment. However, it does establish three valuable principles in the context of transboundary harm and environmental risks. These principles

[220] Birnie, P. W. & Boyle, A. E. (2002) p. 111.
[221] Birnie, P. W. & Boyle, A. E. (2002) p. 111.
[222] Birnie, P. W. & Boyle, A. E. (2002) p. 111.
[223] Preamble of the Declaration of the UN Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992.
[224] Birnie, P. W. & Boyle, A. E. (2002) p.82 f.

are included in Principles 2, 18, and 19, of which Principle 2 is a restatement of Principle 21 of the 1972 Stockholm Declaration.[225]

Both Principle 2 and Principle 21 were affirmatively referred to in the *Request for an Examination of the Situation* by Judge Weeramantry.[226] In his dissent, Judge Weeramantry deemed the intrinsic principle to be 'a deeply entrenched principle, grounded in common sense, case law, international conventions, and customary international law'.[227]

## 5.4 Applicability to Climate Change Damages

Both Principle 21 of the 1972 Stockholm Declaration, and Principle 2 of the 1992 Rio Declaration state that the No Harm-rule applies equally to areas within, and beyond the limits of national jurisdiction. However, the global atmosphere is not a distinct type of area either. The upward extension of State's sovereignty has traditionally been perceived as infinite, though this perception has been modified through the adoption of outer space law.[228] The territory above the high seas is on the other hand open to everyone. [229] As for the atmosphere, layers of airflows incessantly move over the different territories – indifferent to jurisdictional borders – and therefore it cannot be equated with airspace.[230]

The response of the international community has been to class the global atmosphere as a 'matter of common concern'. The first time the global atmosphere was labelled 'common concern' was in UNGA Resolution 43/53. This has later on been repeated and confirmed in the 1985 Vienna Convention for the Protection of the Ozone Layer and in the 1992 UNFCCC.

The decision to label the global atmosphere and the global climate a common 'concern' was a political compromise. The initial proposal was to use the term 'common heritage of mankind'. The terminology that was eventually chosen, indicates a different legal status than the other phrases employed to designate natural resources - such as permanent sovereignty, common property, shared resources, or common heritage.[231]

State practice is inconclusive as to the precise connotations of designating an area as one of these concepts. The extent to which States are responsible to prevent harm to resources will differ, in particular regarding

[225] Birnie, P. W. & Boyle, A. E. (2002) p.105.
[226] *Request for an Examination of the Situation* in Accordance 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France) Case, I.C.J. Reports (1995) p. 288.
[227] *Dissenting Opinion by Judge Weeramantry* to Request for an Examination of the Situation in Accordance 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France) Case, p. 347.
[228] 1944 Convention on International Civil Aviation, Art. 1; Shaw, M. (2003) p. 464.
[229] Shaw, M. N. (2003) p. 463.
[230] Birnie, P. W. & Boyle, A. E. (2002) p. 502.
[231] Birnie, P. W. & Boyle, A. E. (2002) p. 98.

environmental standards and international obligations. The individual context and circumstances under which the resource was designated such a label will offer some guidance to which the legal implications might be. [232]

*Birnie* and *Boyle* argue that the terminology employed on the atmosphere does not make it into common property beyond the sovereignty of States, but, since it is treated in a similar manner as the ozone layer, it is a 'common resource' of vital interest to humankind.[233] The analogous applicability of the legal implications of the global commons to the atmosphere has also been asserted by *Xue Hanqin*.[234]

In conclusion, there are three strong arguments for claiming that the No Harm-rule applies to the atmosphere. First, the scopes of principles 21 and 2 include global commons, such as the high seas, and the atmosphere should therefore fit by analogy. [235] Secondly, there is additional support from State practice, which holds claims for due respect to the rights of others concerning the conduct of nuclear tests in the atmosphere. [236] Thirdly, the Preamble of the 1985 Vienna Convention for the Protection of the Ozone Layer 'recalls' Principle 21 of the 1972 Stockholm Declaration and the intrinsic rule is also mentioned in the Preamble of the UNFCCC. The foremost counter argument is the unwillingness by some States to class climate change as a 'common concern of mankind', which can easily be interpreted as an unwillingness to make the same obligations apply to the climate as to the global commons.

## 5.5 Duty of Prevention

Closely linked to the obligation not to cause harm is the obligation to take suitable measures to prevent harm to the environment. The 'principle of preventive action', or the 'preventive principle', requires States to prevent, and otherwise to reduce, limit, or control activities that might cause, or risk causing environmental damage. While the obligation not to cause damage arises as a limitation to the principle of sovereignty, the only objective of the 'the principle of preventive action' is minimising environmental damage. Another distinction is that 'the principle of preventive action' also applies to damage within the territory of the source causing it.[237]

It was noted by the ICJ in the *Gabčíkovo-Nagymaros Project* case that it was 'mindful that, in the field of environmental protection, 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'.[238] The applicability of this principle in connection with transboundary resources has been given

[232] Sands, P. (2003) p. 286 f.
[233] Birnie, P. W. & Boyle, A. E. (2002) p. 98.
[234] Hanqin, Xue: *Transboundary Damage in International Law*, Cambridge, 2003, p. 191 ff.
[235] Birnie, P. W. & Boyle, A. E. (2002) p. 516.
[236] Birnie, P. W. & Boyle, A. E. (2002) p. 516.
[237] Sands, P. (2003) p. 246 f.
[238] *Gabčíkovo-Nagymaros Project* case (Hungary/ Slovakia), Judgment, I.C.J. Reports 1997, para. 140.

implicit support by the awards in the *Lac Lanoux* arbitration.[239] In the *Trail Smelter* arbitration, the tribunal ordered Canada to prevent future injury.[240] What is of particular interest in this context is that the duty of prevention is explicitly endorsed in Art. 2 UNFCCC.

## 5.6 Threshold of Tolerance

The obligation not to cause harm entails a duty for States 'to take adequate steps to control and regulate sources of serious environmental pollution or transboundary harm within their territory or subject to their jurisdiction'. The existence of such responsibility can be concluded from the wordings: 'the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction' in Principle 21 and Principle 2. However, the same principles also affirm the sovereignty of States over their environment. The unity of the provision results in a limited sovereignty of States to exploit their natural resources, as well as a non-absolute prohibition from causing environmental harm. [241]

While all pollution or anthropogenic activity with adverse effects may result in environmental harm, not all harm can be prohibited. A certain level of damages must be tolerated in an industrialized world where States have to co-exist. While most types of damages have to be tolerated to a certain extent, other damages will have a lower threshold. The tribunal in the Trail Smelter arbitration referred, for example, to damage of 'serious consequence' in its awards.[242] At the same time there is support for the view that radiation should not have to be tolerated at any level, since there are no safe levels of radiation.[243]

Without any quality standards, it is difficult to determine the tolerable level.[244] However, there is no established international standard that specifies what kind of environmental damage can entail responsibility.[245] Therefore, the duty to prevent transboundary harm must entail a *de minimis* test.[246] Apart from damage from ultra-hazardous activities, the words 'significant', 'appreciable', 'substantial', and 'serious' are often employed to describe the threshold of tolerance by international tribunals and in international treaties on environmental protection. Examples from international treaties include Article 1 of the 1979 Convention on Long-Range Transboundary Air Pollution, which states that the pollution in question must lead to 'deleterious effects of such a nature as

[239] Sands, P. (2003) p. 247 f.
[240] *Trail Smelter Arbitration* (United States v. Canada) 16 April 1938, 11 March 1941; 3 RIAA 1907 (1941) Part four, section 3.
[241] Birnie, P. W. & Boyle, A. E. (2002) p. 109 f.
[242] *Trail Smelter Arbitration* (United States v. Canada) 16 April 1938, 11 March 1941; 3 RIAA 1907 (1941) p. 1965.
[243] Okowa, P. (200) p. 88.
[244] Okowa, P. (200) p. 88.
[245] Sands, P. (2003) p. 878.
[246] Okowa, P. (200) p. 88.

to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment'. The ILA also concluded in Article 3 of its 'Rules of International Law Applicable to Transfrontier Pollution' that States are 'in their legitimate activities under an obligation to prevent, abate and control transfrontier pollution to such an extent that no substantial injury is caused in the territory of another State'.[247] Most legal scholars also agree that only significant or serious damage can trigger the No Harm-rule as a prevention duty.[248]

A threshold level formulated as 'significant', 'appreciable', 'substantial', or 'serious' harm presents definitional difficulties.[249] Not all treaties define such thresholds. The UNFCCC contains the definition of 'adverse effects' from climate change, which utilizes the term 'significant deleterious effects'.[250] The ILC has stated that significant harm or risk is a low probability of causing disastrous harm and a high probability of other significant harm, where the word significant has been defined as more than 'detectable' but less than 'serious' or 'substantial'.[251] In the absence of a more specific standard must 'the issue of relativity and the importance of the particular case [must] remain significant factors.'[252]

## 5.7 Standard of Care

There are three standards of care available that can be applied to the obligation to prevent significant or serious environmental damage. These are fault, strict, and absolute liability. Applying a fault standard of care would involve responsibility based on intent or negligence, while strict liability more or less relates to a *prima facie* responsibility to which various qualifications or defences may be available. An absolute liability would imply that there are no available methods of exculpation. The appropriate standard of care will depend on the particular obligation at hand. [253]

The No Harm-rule as expressed in Principle 21 and Principle 2 dictates that States have the sovereign right to exploit their own resources, as well as the responsibility not to cause harm to the territory of others or to areas beyond national jurisdiction. The question is whether the responsibility not to cause harm is an absolute obligation. Some argue that the appropriate standard for States' conduct is strict liability in the environmental field.[254] If this approach is accurate, States are under an absolute obligation to prevent harm and would therefore be liable for any

[247] Rauschning, Dietrich (Rapporteur of the ILA) "Legal Aspects to the Conservation of the Environment - Report of the Committee" in *International Law Association Reports of Conferences 60th Int'l Ass'n Rep. Conf.* (1982) pp. 157-182, p. 160.
[248] Verheyen, R. (2005) p. 151; see e.g. Sands, P. (2003) p. 878.
[249] Shaw, M. N. (2003) p. 766.
[250] Art. 1.1 UNFCCC.
[251] Report of the ILC on its 48th session, UN doc. A/51/10 (1996), p. 108.
[252] Shaw, M. N. (2003) p. 766.
[253] Sands, P. (2003) p. 881.
[254] Shaw, M. N. (2003) p. 762.

eventual harm irrespective of fault. The rule, as formulated in Principle 21 and Principle 2, is equivocal on the matter and so is international practice.

The *Trail Smelter* arbitration, which has had much influence on the elaboration of the No Harm-rule, did not have to address the topic since Canada's responsibility was already accepted from the start.[255] Nor was it addressed in the Nuclear Tests case due to France' decision to end the nuclear testing programme. In the *Corfu Channel* case Albania was held responsible for not alerting two British vessels, or shipping in general, of the existence of mines in its territorial waters.[256] The ruling in this case is not an apparent acceptance of a strict liability.[257]

Another case worth mentioning is the *Gut Dam* arbitration.[258] The background to the case is that Canadian authorities had constructed a dam to facilitate navigation in the St Lawrence River. The dam had been constructed with previous consent from the United States, but its affect on water levels combined with severe storms lead to heavy flooding on the shores of the river and lake Ontario. The United States claimed damages and were awarded such by the Tribunal without it addressing Canada's negligence or fault. This should only cautiously be used as an example of the strict liability approach though since the US approval to the construction of the dam was made on the condition that US citizens would be compensated for any damages occurring from the construction or the operation of the dam.[259]

*Okowa* argue that there has been a movement towards accepting a strict liability approach in the sphere of nuclear and space damages.[260] The existence of such acceptance is, on the other hand, rejected by some writers.[261] *Roda Veheyen* presents the question that if it is accepted that some kinds of activities can lead to responsibility for harm *per se*, could this effect the legal content of the No Harm-rule regarding climate change damages?[262] She points out that, despite the obvious differences between activities causing radiation or space damages and those causing climate change damages, various parallels exist between the two.[263] One parallel is that the degree of risk presented by significant increase in temperature ought to be comparable to that of nuclear or space accidents. Another resemblance is that anthropogenic activities that emits greenhouse gases and nuclear tests leads to substantial harm during the normal course of operation. If it is accepted that nuclear tests are not prohibited *per se*, but that any occurring damage involves strict State responsibility, States should also bear the consequences for lawfully emitted greenhouse gases. This view is supported by *Voigt*, who considers that it is harm *per se* that is

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[255] *Trail Smelter* arbitration (United States v. Canada) 16 April 1938, 11 March 1941; 3 RIAA 1907 (1941).
[256] *Corfu Channel* case (United Kingdom v. Albania), Judgment of April 9th, 1949, I.C.J. Reports 1949, p. 4.
[257] Shaw, M. N. (2003) p. 763.
[258] *Gut Dam* arbitration (U.S. v. Can.) 22 Sept, 1968, 8 I.L.M. 1969, p. 118.
[259] Shaw, M. N. (2003) p. 763.
[260] Okowa, P. (2000) pp. 88, 116 ff.
[261] Verheyen, R. (2005) p. 172.
[262] Verheyen, R. (2005) p. 173.
[263] Verheyen, R. (2005) p. 173.

prohibited, as opposed to the activities causing harm.[264] This would be coherent with international jurisprudence, and the *Trail Smelter* arbitration can be taken as an illustrative example since the smelting of ore in itself is not prohibited.[265]

The arguments presented by *Birnie* and *Boyle* are that an interpretation of the No Harm-rule as an absolute obligation would be an implausible and unreasonable interpretation of the rule. Instead, it would be more reasonable to employ a relative obligation of preventing harm, in as much as an absolute obligation would entail a shifting of the burden of proof, because focus would be on the result and not on the conduct. An absolute obligation would also place 'unacceptable burdens on the freedom of states to pursue their own environmental and developmental policies, and to exercise their sovereign rights over their own natural resources'. Following this, some commentators have limited the applicability of the absolute obligation to ultra-hazardous activities. By placing focus on the activity instead, focus will be on diligent control of dangerous activities. This would be a more functional approach for international regulation of the environment and for the interpretation of the No Harm-rule, since the elaboration of standards of diligent conduct forms a vital complement to the rule in practice.[266]

[264] Voigt, C. (2008) p. 8.
[265] Voigt, C. (2008) p. 8.
[266] Birnie, P. W. &Boyle, A. E. (2002) p. 114.

# 6 Due Diligence

Due diligence signifies the requirements of States to adopt legislative and administrative controls applicable to public and private conduct, with the objective to effectively protect other States and the global environment.[267] It is, by definition, rather an obligation of conduct than one of result.[268] When an activity involves a risk of significant transboundary damage, the State is required to take all necessary measures to prevent such.[269] Failure to observe due diligence does not have to consist of malice, negligence or recklessness; it rather implicates that the State has failed to observe the standard expected of a reasonable government under the circumstances.[270]

It has been claimed that an attempt to determine the contents of due diligence as a specific set of rules of conduct would be presumptuous and non-desirable.[271] Regardless of this statement, some of the essential elements of due diligence will now be discussed.

## 6.1 The Contents of Due Diligence

Arriving at the conclusion that due diligence is the applicable standard leads to the question of what specific measures are needed in order to be in conformity with the standard. However, there is no conclusive answer to this question and therefore each case has to be judged on its own merits.[272] In the *Corfu Channel* case, it was noted by the Court that States should take 'all necessary steps' to prevent harm from being caused to another State.[273] More elaborate is the commentary by the ILC to its '2001 Draft Articles on Prevention of Transboundary Harm from Hazardous Activities', which states that:

*... due diligence is manifested in reasonable efforts by a State to inform itself of factual and legal components that relate forseeability to a contemplated procedure and to take unilateral measures, in a timely fashion, to address them. Thus, States are under an obligation to prevent significant transboundary harm or at any event to minimize the risk thereof... Such measures include, first, formulating policies designed to prevent significant transboundary harm or to minimize the risk thereof and, secondly, implementing those policies. Such policies are expressed in*

[267] Birnie, P. W. & Boyle, A. E. (2002) p. 112.
[268] Hanqin, X. (2003) p. 165.
[269] Hanqin, X. (2003) p. 163.
[270] Okowa, P. (2000) p. 79.
[271] Okowa, P. (2000) p. 83.
[272] Voigt, C. (2008) p. 10.
[273] *Corfu Channel* case (United Kingdom v. Albania), Judgment of April 9th, 1949, I.C.J. Reports 1949, 4, p. 23.

*legislation and administrative regulations and implemented through various enforcement mechanisms.*[274]

Though still giving little direction, the flexibility of this approach is one of its advances.[275] The effectiveness and capability of the State, and the nature of specific activities may all be taken into consideration when determining the appropriate level of diligence.[276] This permits special allowance to be made for developing countries when justifying the degree of diligence owed by such.[277]

There have been several attempts made in State practice and in the work of codification bodies to define the conduct expected by a State in its exercise of due diligence.[278] In order to give due diligence more contents and predictability, it can be useful to look at internationally agreed minimum standards set out in treaties or in the decisions and resolutions of international bodies.[279] This approach is, for example, used in the 1982 UNCLOS.[280] In some international treaties, reference is merely made to 'international standards', which gives further latitude.[281] Exculpation by reference to national laws regulating the standard of due diligence seems to be un-obtainable due to the inclusion of the word 'international'.[282] The argument that due diligence would be 'such care as Governments ordinarily employ in their domestic concern and might be reasonably expected to exert in matters of international interest and obligation' was also rejected by the Tribunal in the *Alabama* case.[283] The Tribunal gave instead preference to the argument that due diligence was the standard which should be exercised by a neutral Government. An alternative approach to that of established standards would be to refer to other standards such as 'best available technology', which would result in a continuously up-dated and contemporary standard of diligence.[284]

Three other emerging concepts and principles are also often referred to as having influence on the contents of due diligence. These are the precautionary principle, the duty to carry out environmental impact assessment and the concept of 'sustainable development'.[285] The first two will be returned to below. As for the concept of 'sustainable development', it has been stated in Principle 4 of the 1992 Rio Declaration that:

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[274] Report of the ILC, UN doc. A/56/10, 2001, p. 154.
[275] Birnie, P. W. & Boyle, A. E. (2002) p. 112.
[276] Birnie, P. W. & Boyle, A. E. (2002) p. 112.
[277] Birnie, P. W. & Boyle, A. E. (200) p. 112.; see *e.g.* the 1982 UNCLOS Art. 194 and the 1972 London Dumping Convention Art. 2.
[278] Okowa, P. (2000) p. 83.
[279] Birnie, P. W. & Boyle, A. E. (2002) p. 113.
[280] See *e.g.* Arts. 210 and 211.
[281] Birnie, P. W. & Boyle, A. E. (2002) p. 113; see *e.g.* 1982 UNCLOS Arts. 207 and 208.
[282] Verheyen, R. (2005) p. 174.
[283] The Geneva Arbitration (*the Alabama case*) in: Moore, J.B.: *History and Digest of International Arbitrations to which the United States has been a Party*, Vol. I., 1898, p. 572.
[284] Birnie, P. W. & Boyle, A. E. (2002) p. 113.
[285] Okowa, P. (2000) p. 83 f.

*In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.*

Reference is further made to 'sustainable economic growth' throughout the UNFCCC. The concept of sustainable development is, to a certain extent, just a restatement that measures to protect the environment cannot be separated from the economic capacity and developmental concerns of the specific State.[286] However, the program established under Agenda 21 for promoting sustainable development recognizes, with regard to the energy sector, that:

*The need to control atmospheric emissions of greenhouse and other gases and substances will increasingly need to be based on efficiency in energy production, transmission, distribution and consumption, and on growing reliance on environmentally sound energy systems, particularly new and renewable sources of energy. All energy sources will need to be used in ways that respect the atmosphere, human health and the environment as a whole.*[287]

## 6.2 Foreseeability of Harm and the Precautionary Principle

It has previously been noted that the No Harm-rule probably does not prohibit the causing of harm as such, but that it rather prescribes for diligent prevention and control of harm. The question that then arises from this conclusion is when the obligation for diligent prevention and control emerges. The answer is to be found in the foreseeability or likelihood of the harm and its potential magnitude.[288]

The ILA has concluded that impermissible harm is foreseeable.[289] This means that the State knew, foresaw, or ought to have known or foreseen that the particular conduct was, or would be a part of a composite cause that would lead to such harm.[290] *Voigt* founds her discussion on a presumption that it is sufficient that a State 'ought to have known' about the consequences of the conduct.[291] The tribunal in the *Trail Smelter* arbitration referred, on the contrary, to injury of 'serious consequence', which was established by 'clear and convincing evidence'.[292] However, irreversible or serious damage might occur before preventive measures were called for if such a high standard of proof was required by

[286] Okowa, P. (2000) p. 83 f.
[287] Agenda 21, Chapter 9, Para. 9 (9).
[288] Birnie, P. W. & Boyle, A. E. (2002) p. 115.
[289] ILA Report of the 64th Conference (1990).
[290] ILA Report of the 64th Conference (1990).
[291] Voigt, C. (2008) p. 11 f.
[292] *Trail Smelter Arbitration* (United States v. Canada) 16 April 1938, 11 March 1941; 3 RIAA 1907 (1941) p. 1965.

contemporary international law.[293] On the other hand, States might be reluctant to employ preventive measures to address unrecognized risks, which is why the so-called precautionary principle or approach is of significance.[294]

Behind the precautionary principle lies the presumption that the knowledge needed for an effective protection of the environment is not always available and that this deficiency could lead to unwanted effects if measures are required only when there is full proof of the risk involved.[295] The essence of the rule is that it 'changes the role of scientific data' as it applies when a potential risk has been identified, but without sufficient scientific certainty.[296]

The principle has been phrased in Principle 15 of the 1992 Rio Declaration with the following words:

*In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*

The precautionary principle is further referred to in a number of international treaties. One of them is the UNFCCC where it is included in Article 3. The threshold of harm in Article 3 is the same as in Principle 15 of the 1992 Rio Declaration, which is risk of 'serious or irreversible harm'. It can be noted that the threshold used in the UNFCCC to trigger the precautionary principle is higher than the threshold level employed in its definition of adverse effects. Furthermore, despite the parties' commitments to take precautionary measures in Article 3, there remains substantial disagreement among the Parties on how the provision should be implemented.[297]

## 6.3 Environmental Impact Assessment and Monitoring

Environmental Impact Assessment (EIA) is, as stated in Article 1 (vi) of the 1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context, 'a national procedure for evaluating the likely impact of a proposed activity on the environment'. An EIA should be carried out in order to prevent, reduce, and control significant adverse transboundary effects.[298] The source State is expected to perform the EIA

[293] Birnie, P. W. & Boyle, A. E. (2002) p.115 f.
[294] Birnie, P. W. & Boyle, A. E. (2002) p.116.
[295] Freestone, David & Hey, Ellen: *The Precautionary Principle and International Law – The Challenge of Implementation*, The Hague, 1996 p. 12.
[296] Birnie, P. W. & Boyle, A. E. (2002) p.117.
[297] Birnie, P. W. & Boyle, A. E. (2002) p. 119.
[298] 1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context, Article 2 (1).

in accordance with its best available practical means and the circumstances.[299]

The requirement to perform an EIA for proposed activities that are 'likely to have a significant impact' on the environment is included in Principle 17 of the 1992 Rio Convention. However, it is held by *Hanqin* that it is unclear if a duty to perform an EIA can be claimed to exist outside of treaty law.[300] To this, *Birnie, Boyle*, and *Voigt* oppose by arguing that the requirement to execute an EIA is so well rooted in national practice that it might form a principle of general international law or even a rule of customary law.[301] In the context of climate change, *Birnie* and *Boyle* further argue that process referred to in Principle 17 applies, on highly qualified terms, to the impacts of climate change on basis of the provision in Article 4 (1) of the UNFCCC. However, they also state that the reference made to EIA in the UNFCCC is made on very broad terms.[302]

In close connection with the duty to perform EIA is the monitoring process. Monitoring is a process in which States 'observe, measure, evaluate and analyze, by recognized scientific methods, the risks or effects' of environmental harm.[303] Unlike EIA, which is executed prior to the proposed activity, monitoring is usually employed after the activity has begun in order to ensure that the initial EIA predictions were accurate and establish whether additional measures are needed in order to avoid harm occurring.[304]

[299] Hanqin, X. (2003) p. 168.
[300] Hanqin, X. (2003) p. 167.
[301] Birnie, P. W. & Boyle, A. E. (2002) p. 131; Voigt, C. (2008) p. 13.
[302] Birnie, P. W. & Boyle, A. E. (2002) p. 132.
[303] 1982 UNCLOS, Art. 204.
[304] Birnie, P. W. & Boyle, A. E. (2002) p. 130 f.

# 7 Analysis and Conclusions

The purpose of this thesis, as initially stated, is to examine if there can be State responsibility for climate change damages and if injured States can be awarded compensation for such damage. In order to determine this, we will start by looking at the essential elements of a wrongful act and see if they are fulfilled. The first element to be discussed is the objective element, which considers the prerequisite that the conduct must be in violation of an international obligation in force for that particular State.

The existing treaty law on climate change consists of the UNFCCC and its Kyoto Protocol. The provisions of the UNFCCC are not binding obligations, as the word 'should' is used throughout the Convention. Nevertheless, it holds two provisions of particular interest in this context, which are Article 4 (4) and, to a certain extent, Article 4 (2).

On the other hand, the Kyoto Protocol does establish binding reduction targets. However, not all of the major GHG-emitting States have ratified the Protocol and the reduction targets set under it are quite unimpressive – for example, Australia is allowed to increase its GHG emissions with 8 % during the first commitment period, despite having the second largest emissions per capita of carbon dioxide from the burning of fossil fuels.

Another international obligation, which seems to have more potential in this context, is the No Harm-rule. As a rule of customary law, it has the advantage of being applicable to all States, but also the disadvantage of being quite vague. For example, it is not to be taken for granted that the No Harm-rule can be applied to the atmosphere. However, it can be argued that the atmosphere, which has been declared a 'matter of common concern', bares many resemblances to the global commons and that the rule therefore should apply by analogy. Further, the damage climate change will result in is not by any means restricted to an alteration of the atmosphere. Though involving a complex causal chain it is inevitably so that GHG emissions, by altering the atmosphere's ability to trap solar radiation, will lead to flooding, decreased crop-productivity, loss of land etc.

A breach of the No Harm-rule with regard to climate change damages would consist of failure to exercise due diligence when confronted with a risk of 'significant deleterious effects'. Arguments could also be made in support for a lower threshold, such as 'substantial' deleterious effects, but that would be optimistic. According to the definition stated by the ILC, a risk of significant harm is to be understood as a low probability of causing disastrous harm, or a high probability of other significant harm. The predictions for climate change include a more than 90% risk of hot extremes and heat waves, and a more than 66% risk of decrease in precipitation in most subtropical regions. Furthermore, the SRES scenario that involves the smallest changes to temperature and sea level points to a 0.18-0.38 m rise of the sea level. The SRES scenario that involves the largest changes points to a 0.26-0.59 m rise of the sea level. When taking the predicted impacts of climate change into consideration, which in some

ways even ought to be considered as disastrous, it should be possible to argue that there is a high probability of significant harm.

The standard of care expected by a State when confronted by a high risk of significant harm is that of due diligence, which brings us to the subjective element of an internationally wrongful act. Since most anthropogenic GHG emissions come from activities by private individuals and privately own businesses, these activities must be attributed to the State. On the other hand, States are required to take all necessary steps to prevent harm from being caused to other States.

States are expected to exercise due diligence if the threat of harm is foreseeable. The required level of foreseeability is unclear. However, Parties to the UNFCCC can hardly argue that they were unaware of the risks involved in emitting GHGs since the link between GHG emissions and climate change is stated in the Convention. Additionally, the precautionary principle calls on States to take measures if there are threats of serious or irreversible damage even if there is lack of full scientific certainty regarding the threat. The severity of the expected effects from climate change, combined with the fact that there will be irreversible losses, ought to qualify the threat for precautionary measures.

The extent of measures expected of a reasonable Government depends on its capability and applicable international standards. The precise extent and nature of these measures are difficult to determine, but each case has to be judged on its own merits. The Parties to the UNFCCC have assigned themselves to a number of commitments, which are aimed at climate change prevention. These are, as previously noted, not binding but can be used as a means for interpreting the expected measures from a State in its fulfilment of due diligence.

The conclusion of this discussion is thus that a State can be in breach of the No Harm-rule if it fails so perform the required degree of diligent control over GHG emissions within its jurisdiction.

We will now turn to the second question posed in the introduction, which is: if State responsibility was established, then which damages would be compensated for? Compensation can generally be awarded for all financially assessable damage. Injuries to non-use values, such as biodiversity, are by principle compensable, but difficult to translate in to financial terms. It will conclusively be impossible to achieve full compensation, since intrinsic ecological values cannot be price tagged and certainly not regained. An additional challenge here is whether climate change damages would be too indirect or remote to qualify due to the complex causal chain involved. The question is whether the commonly supported knowledge of the link will suffice.

Another challenge associated with the complex causal chain is to prove specific causation. It would be unrealistic to attempt to link a specific climate change related injury and a specific State of origin. Claims for State responsibility would be precluded if it was necessary to prove such a link, and this is one of the foremost reasons to why State responsibility probably cannot be established for climate change damages in practice. Had instead it been sufficient that the damage at least to some extent was caused by the

conduct, then it might have been possible to determine relative causation based on emission data.

Furthermore, there is the challenge of apportioning the costs. The multitude of actors involved in causing climate change present substantial difficulties to the allocation of costs. Three, perhaps unorthodox, solutions have been presented to this problem. One is to allocate the costs in proportion to the State's percentage of the total anthropogenic greenhouse gas emission; though difficult to assess, Parties to the UNFCCC should keep inventories of its emissions by sources and removal by sinks. The second possible solution would be to apportion the costs based on the concept of common but differentiated responsibilities, and the third possible solution would be based on a combination of these two suggestions by combining cumulative emissions per capita with GDP.

It has been claimed that the State responsibility regime is ill equipped to handle environmental damages, and climate change damages is no exception. An attempt to seek redress for climate change damages by claiming responsibility based on breaches of the No Harm-rule seems indeed to be a near impossibility. However, the recognition shown towards duties to prevent and mitigate harm could still trigger and influence the adoption of additional, and more effective legislative and administrative measures.

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