THE LEGAL BASIS OF REPARATION CLAIM FOR CLIMATE CHANGE DAMAGE UNDER INTERNATIONAL LAW: THE PERSPECTIVE OF VULNERABLE DEVELOPING COUNTRIES

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Declaration

Yitages Mengstie, hereby declare that this dissertation is original and has never been presented in any other institution to the best of my knowledge and belief. I also declare that any information used has been duly acknowledged.

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TABLE OF CONTENT

Abstract

There is unequivocal scientific consensus that the global climate is changing and that man-made GHG emissions have caused the warming observed since the 1950s. The principal cause for high level accumulation of GHGs in the atmosphere is that of burning of fossil fuels which are connected with the economic activities of industrialized world. This human-induced climate change is producing or will produce significant adverse effects on economies, people and environment of the international community. The impacts of climate change are experienced unevenly. Even if poor countries are least responsible for causing the problem, scientific predictions of impacts of climate change have demonstrated that they will suffer the most severe consequences of climate change.

The legal regimes put in place are inadequate to tackle the global climate change problem. UNFCCC is a framework agreement and hence contain no specific binding commitments. Even if the Kyoto protocol to the convention imposed concrete obligation on developed states to reduce their GHG emissions by specific amount, these standards do not meet those recommended by climate scientists. Moreover, the worst emitters of GHG are either outside the protocol such as USA or have no binding reduction obligation such as China. In light of this regulatory failure, victims of climate change are warning that they are thinking ways to bring the worst emitters of GHGs to justice. The question that could arises is whether there is a legal basis under international legal framework that oblige the industrialized nations to compensate particularly vulnerable developing countries for inevitable damage and loss associated with climate change. The analysis in this thesis has shown that the climate change regime offer no opportunity for particularly vulnerable countries to oblige the worst GHG emitters to pay compensation for climate change damage. A better opportunity may indeed lie in appealing to primary rule of general international law and to the rules of state responsibility. The most important rule identified is that of the well-established rule of customary international law called the no-harm rule. The no-harm rule requires states to prevent damage and to minimize the risk of damage to other states. The writer argue that despite remaining gaps and legal as well as factual problems, claims by particularly vulnerable developing countries against specified developed countries, alleging violation of the no-harm rule and seeking compensation would have a firm basis in international law. However, the writer is also of the opinion that to claim the discharge of the legal duty under the no-harm rule, instituting adjudication proceedings for several individual cases should not be the choice. The first choice must be that both the developed countries and the vulnerable developing countries should act in collaborative manner to establish a comprehensive and practical compensation scheme.

Key terms: climate change, climate change damage, reparation, particularly vulnerable developing countries, no-harm rule, state responsibility

Lists of Abbreviations

AR_4	Fourth Assessment Report
CC	Climate Change
CCD	Climate Change Damage
CDM	Clean Development Mechanism
CJ	Corrective Justice
COP	Conference Dioxide
DJ	Distributive Justice
EU	European Union
^0F	degree Fahrenheit
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHG	Green House Gas
ICJ	International Court of Justice
ILC	International Law Commission
IPCC	Intergovernmental Panel on Climate Change
LDCF	Least Developing Counties Fund
OECD	Organization for Economic Cooperation and Development
OPEC	Oil Producing and Exporting Countries
PPM	Parts per Million
SCCF	Special Climate Change Fund
UNCC	United Nations Compensation Commission
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
WG	Working Group
WMO	World Meteorological Organizations

CHAPTER ONE

INTRODUCTION

1.1. Background of the Problem

Climate change is undoubtedly the biggest and the most complex environment problem that mankind face today. The proliferation of green house gases (Co_2, methane, CFC, nitrous oxides), in the atmosphere has warmed the planet through the so called green house effect chemical process. This phenomenon of global warming is threatening and will continue to threaten with greater severity-the ecosystems that support all life and the stabilization of human civilization.[1] The rising temperatures that result from higher carbon concentrations are linked to changes in rainfall, with attendant impacts on water supply for human, agriculture, and ecosystems. Rapid melting of glaciers result in severe threats to water supply and hydropower. Additionally, increased fire frequency, ecosystem damage, desertification and irrevocable sea level rise, observed today, will persist for next generations and are irreversible. There is increasingly strong evidences that these changes are due to human activity. Moreover, such observed impacts indicate that we have already reached an atmospheric green house gases concentration that is the danger zone, and vulnerable developing countries have emphasized that they are already experiencing what is for them dangerous climate change.

The impacts of climate change do not affect the whole world community uniformly. People of vulnerable developing countries hit or suffer first and worst even if they contribute least to causing the problem.[2] The increasing evidence depicts that climate change will strike the poorest nations -such as Africans, small island states and other developing countries -disproportionately and unfairly. The vulnerability of these groups is based on the kinds of climate changes to which they will be exposed as well as their inability to protect against shifting weather patterns and acute hydro-meteorological

[1] Burkett, Maxine, Climate Reparations (October 1, 2009). Melbourne Journal of International law, Vol. 10, 2009. at4 Available at SSRN: http://ssrn.com/abstract=1539726 Last visited on1april,2010.
[2] *Id.* at2

events.[3] In other words, global warming is expected to have dramatic impact on dry land agriculture, coastal systems and fisheries, the very systems on which the globe's poorest depend. Further, the poor nations lack the resources to defend themselves with, for example, expensive flood controls or sophisticated public health program.

This wide and complex issue of the impacts of green house gases on the global atmospheric system, i.e. climate change, and the attendant adverse effects, urged the international community to devise regulatory mechanisms that would recognize and address the problem. Accordingly, the issue of climate change firmly became an international agenda by the 1980s. In 1988 the UN General Assembly (UNGA) passed Resolution 43/53 on the protection of the Global climate for present and future Generations of mankind, and declared the issue to be one of 'common concern to mankind'.[4] Two years later, in 1990, UNGA Resolution 43/212 established an Inter governmental Negotiating committee to develop a legal instrument on climate change. The outcome was the 1992 UN Framework Convention on Climate Change (UNFCCC) which was opened for signature in June 1992 as part of the UN conference on Environment and Development (UNCED) in Rio De Janeiro, Brazil. In entered into force in 1994 and now has 192 state parties. Article 2 of the Convention provides that the ultimate objective of the convention is to 'achieve… stabilization of greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.' Furthermore, the State parties included in Annex I (the industrialized countries with their significant historical emission records) committed themselves to adopt policies and measures with the aim of returning individually or jointly to their 1990 levels these anthropogenic emissions of Co_2 and other green house gases by the end of 2000.[5] Under Art.4.4, these developed countries also committed to assist the developing countries that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to these adverse effects. Moreover, understanding that the commitments of developed countries under the Convention were

[3] *Id*.
[4] UNGA resolution on Protection of Global Climate for present and future Generations of mankind, UNDoc A/Res/43/53/6 December 1988).
[5] , United Nations Framework Convention on Climate Change (hereafter UNFCCC) (adopted 9 may 1992, entered in to force 21 march 1994),at Art.4.2

not adequate, the parties to the 1991 UNFCCC concluded the 1997 Kyoto Protocol which set out a firm schedule for reduction of green house gases emissions.

Therefore**,** climate change regime established to tackle the problem of climate change embraced mitigation and adaptation measures as a major means for meeting the needs of climate change victims. However, these existing mechanisms are affected by major gaps in their scope and in compliance, and thus do not result adequate solution to the problem in general and to the victims of climate change in particular.

One of these gaps is the climate change regime does not contain any explicit provision for holding developed countries responsible to pay compensation to the victim of climate change damage caused due to inadequate mitigative and adaptive measures, or for damage that they already incurred. However, in the absence of explicit rules in climate treaties, the climate vulnerable are increasingly demanding compensation and the developed countries in contrary strongly contend that there is no any legal responsibility on them to pay compensation.

The major aim of this thesis is, therefore, to explore whether there is a legal basis that support the compensation claim of the climate vulnerable for climate change damage under international law.

1.2. Statement of the Problem

Climate change poses unprecedented threat to the vulnerable developing countries. The primary cause of climate change is the increased atmospheric concentration of green house gases which is the result of human activities mainly from the industrialized countries. Thus, to curb or minimize the threat, mitigation of the emission of green house gases is the primary essential measure that should be taken by the international community. Despite mitigation measures, however, damage is inevitable. Therefore, adaptation and funding for adaptation of vulnerable countries should be next action to limit the harm. Accordingly, the UNFCCC and the Kyoto Protocol contain commitments

on the mitigation of green house gases emission and on adaptation to the adverse effects of climate change. However when one assess the climate change regime established to tackle the problem, one would realize that the regime embraces weak commitments and there are essential gaps left uncovered. Firstly emission reduction commitments undertaken by developed countries are by far less stringent when compared with the magnitude of the problem. This is even with its ambitious goal and the binding nature of the accompanying protocol, the UNFCCC provides an inadequate response to the mitigative and adaptive needs of the climate vulnerable. For example, Art. 4(2) of UNFCCC explicitly stipulates that the stringency of the emission reduction measures should be to the extent of demonstrating that the developed countries are taking the lead in modifying longer trends in anthropogenic emissions, and this depicts that the developed countries are not obliged under the Convention to take more stringent mitigation measures. Moreover, it is in light of this objective that the Kyoto protocol set a quantified emission reduction commitment for developed countries. Thus, even if the emission reduction were met, that would remain insufficient to avoid dangerous climate change. Secondly, the Kyoto protocol proceeds even without the participation of a major emitter like the USA, who, at the time of conclusion of the Kyoto protocol was the single greatest emitter of green house gases.

The vulnerable developing countries are now voicing that they are already experiencing the impacts of climate change. Both FCCC and Kyoto protocol contain explicit provisions relating to adaptation and funding for adaptation.[6] However, the funding mechanisms established by the climate change regime are not adequate enough to meet the adaptation cost demanded by the climate vulnerable to alleviate the impacts of climate change.[7] What makes things far worse for victims of climate change is that the current climate forecasting suggests that many adaptation measures are rapidly becoming outdated and quaint.[8] As a result, it become evidently inevitable that the climate vulnerable will suffer from the following damage-damage that result from insufficient mitigation efforts and delays in accessing adequate adaptation funding and technologies,

[6],UNFCCC, Supra note 5 See at Art. 4.1(b), 4.3, 4.4, 4.5, 12.1
[7] Maxine Burket *Supra* note 1 at 8
[8] *Id.*

or challenges in institutional capacity, and loss and damages that are unavoidable regardless of future adaptation measures to be undertaken.[9] This acute threat urged the victims of climate change damage to take action against the major contributors of climate change problem. Partly due to the fact that they are already suffering from these damages and partly understanding that these damages are inevitable to occur, the climate vulnerable are increasingly demanding compensation from the developed world that are substantially caused the problem by raising the issue on different climate change negotiation including the recent 2009 Copenhagen conference. But the position of the developed countries particularly USA, is that they denied any legal responsibility that they owed to climate change damage. Even if they committed to fund climate vulnerable, they announced that the fund is provided it is not to discharge their legal responsibilities rather it is for assistance purpose. Here lies the main problem that will be dealt with by this thesis i.e. the legality of compensation claim of victims of climate change.

For the developed countries to be obliged to pay compensation, they must undertake a commitment to be responsible for climate change damages either the climate change regime or by any other means. However the climate change treaties (FCCC and Kyoto protocol) do not address the question of how losses from these types of damage should be born amongst nations. In the absence of a system that give recourse to the climate vulnerable to damages and loss caused by climate change, or in the face of the existing gaps under the climate change regime, offering a legal ground to reparation claim of climate vulnerable would encounter significant challenges.

In this circumstance it is necessary to resort and consult the rules of state responsibility under the general international law. Under the traditional state responsibility rules, to hold state responsible to pay compensation, the state must assume an international obligation; there is breach of this obligation and then the breaching activity cause damage. Therefore, for the developed world to pay compensation for climate change damage, they must have assumed an international obligation to prevent damage due to climate change at the time when damage occurred in either special climate change regime

[9] *Id.*

or customary international law. However, when one assess the climate change regime, it is vague in this regard and makes determining the existence of the obligation to prevent climate change damage a challenging task and controversial. Moreover, when we scrutinize the other source of international obligation, i.e. customary international law, there are rules that in case of breach give rise to responsibility to make good the harm done. According to this rule, no state must harm another. The question here is therefore whether legal duties to prevent climate change damage under the no harm rule can still exist to be a basis for reparation claim of victim of climate change damage.

In this regard, the challenges for securing a legal ground for compensation claim of climate change damage is not only limited in determining the existence of the obligation to prevent damage, but also in demonstrating that there is breach of these obligation. Showing breach requires proving wrong doing on the part of developed countries due to their high level emissions of green house gases. The other challenge is establishing causal link between the actual activity and the damage, i.e. the impossibility of attributing emissions of a specific country to specific damage due to the complex and synergetic effect of the diverse pollutants and polluters and the non-linearity of climate change, is problematic in this context. Moreover, climate changes are the result of a multitude of emitters, emitting activities and emitted gases. It is, thus, evident that the question of how to divide responsibility cast great challenges

Therefore, under the title of the legal basis of reparation claim for climate change damage under international law, an attempt will be made to examine the diverse factual challenges, legal gaps and other uncertainties that could face in an attempt to give a legal basis for compensation claim for climate change damage. Moreover, upon the findings of the study, an attempt will be made to show, in the absence of a system by which countries that have contributed most to climate change pay compensation, how international legal rules and precedent can give a legal basis for compensation claim of climate vulnerable.

1.3. Research Questions

Under the title of the legal basis of reparation claim for climate change Damage under international law, the thesis seek to address or investigate the question whether there is a legal ground under international law to claim and obtain reparation for climate change damage and what are the legal challenges in pursuing it?. Specifically, the paper will answer the following questions.

- Is there climate change and, then climate change damage? What is/are its cause(s), and present and future damages? And who would be significantly affected? And why?
- How the international climate regime addresses the issue of climate change damages and the question of responsibility to pay compensation for those damages?
- Whether or not the rules of state responsibility under general international law can be relied and well equipped to secure a legal basis for obtaining compensation for climate change damages?
- Is there an obligation not to cause climate change damage in climate change regime in particular and in public international law in general for holding state responsible for failure to avoid damages?
- Is there any wrong doing on the part of the developed countries when climate change damage occurs?
- Is it possible to establish a causal link between the activity (emission of green house gases) and the occurring climate change damage? And is it possible to attribute specific damage to specific country? And how can damage be apportioned among responsible states?
- How encouraging /inhibiting is the international legal environment to give a firm legal basis for compensation claim of climate change damages?
- What mechanisms and measures should be established or taken by the international community as a way forward for alleviating the diverse legal and factual challenges of the climate vulnerable to get redress for climate change damages?

1.4. Objective of the Study

Climate change impacts will hit the world in uneven manner. States that have little capacity to adapt to the adverse effects from climate change and that have contributed virtually nothing to the occurrence of the problem are suffering and will suffer first and worst. The vulnerable developing countries are increasing claiming compensation contending that the developing countries owe a legal obligation toward them to compensate damages resulting from climate change under international law. But the developed countries particularly USA, even if agreed to give significant amount of fund to vulnerable developing countries to reduce the damage, they denied that they are under international legal obligation to compensate climate change damage. The legal question here is therefore to what extent the compensation claim of developing countries is backed by a legal basis under international law.

Thus the main objective of this thesis is to explore whether compensation claim for climate change damage has a legal basis under international law so that countries that have contributed most to green house gas pollution will pay compensation for climate change damage suffered by particularly vulnerable developing countries, which will suffer the most from the adverse effects of climate change. Specifically, this study strives to:

- Identify the observed and predicted climate change, the consequent adverse impacts, its root causes, these who contributed or suffer most
- Examine the response of the international community through establishing regulatory regime, and the adequacy and effectiveness of same for tackling the problem.
- Demonstrate the existing gaps or the absence of a system under the international climate regime in addressing the issue of responsibility to pay compensation for climate change damage
- Investigate the role of the traditional rule on state responsibility and other customary international law in offering a legal authority to compensation claim for climate change damage and the accompanying challenges and uncertainties.

- Suggest possible mechanism that need to be established as a way forward to address damage resulting from climate change by filling the existing legal gaps and challenges so that to meet the glaring injustice that has occurred and will occur.

1.5. Scope of the Study

The thesis, with the purpose of investigating the legal basis to claim compensation for climate change damage, engage on scrutinizing what international law has an offer to put or legally justify that industrialized nations are under obligation to compensate vulnerable developing countries for damage resulting from human made climate change. The focus of the thesis is the relationship between states and their mutual right and obligations. The analysis basis only on public international law as the objective is to examineexamine the stand of international law for holding the developed countries responsible to the vulnerable developing countries as the developed countries fail to regulate green house gas emissions. It does not cover states obligations vise-a Vis individual right holders, Therefore, the issue of liability to compensate under domestic law such as tort law and other international civil liability regime and international human right regime are beyond the discussion of this thesis. Moreover, the issue of legal procedure is also of out this thesis. Therefore, subject such as the competent forum and other procedural aspect will not therefore be addressed in this thesis.

1.6. The Significance of the Study

The findings of the study will hopefully benefit both the developed and developing countries. The current trend on the part of the developed countries that have contributed largely in causing the problem is to admit liability implicitly through undertaking commitments to offer significant amount of money to the vulnerable developing countries to reduce the damage through adaptation activities. But the problem here is mostly there is reluctance or lack of political will to put into practice or action what they already promised. As the result, damage become inevitable and unavoidable and the option to the vulnerable developing countries will be to go to a lawsuit. Therefore, if the findings of the thesis reveal that there is a firm legal basis for compensation claim of

damage resulting from climate change under international law, the vulnerable developing countries can rely on those legal rules and principles identified in the thesis to establish a justifiable case and thus the thesis will benefit them by offering the necessary input to address the question of the legal authority that support their case if lawsuits become imperative due to the failure or inadequacy of the current diplomatic means. The thesis will also make invaluable contribution for potential advocates, judges and other legal practitioners by serving as reference resources if they are seized or invested with the task of preparing, defending and resolving cases on the question of liability for climate change damage. The findings of the thesis in this way will also be important to the developed countries to the extent that it will induce them to make genuine commitments and practically discharge same by vanquishing the current trend of denying the existence of legal responsibility. Moreover, it will also has a tremendous significance for developing countries whose emission of green house gas is increasing dramatically such as china, India, Brazil, by depicting the existence of a legal ground for holding them liable for climatic change damage in the future so that it reminds them to take the necessary measure to exonerate liability. On the other hand, if the findings demonstrate that there is legal gaps and uncertainties, the measures suggested in the thesis will show the avenue to alleviate this problem as a way forward so that it will put possible alternative up on which the international community to think about in the future.

1.7. Methodology of the Study

In investigating the legal challenges to claim compensation for climate change damage, the following methods will be employed.

1. **Literature review**. An attempt will be made to survey available materials both hard and soft copy that are pertinent to the issue under investigation and which will give insight or serve as a momentum by depicting the existing conceptual and legal framework on the subject of climate change in general and climate change damages in particular thereby to identify the threat of climate change and damage, and the existing views on whether international law is well equipped to deal with the issue of compensation for climate change damage and then to come up with new position that will be embraced in the thesis.

2. **Document analysis.** Different international instruments such as treaties, declaration, plan of action, modalities, guidelines that are deemed to be relevant to the issue under investigation will be referred, considered and analyzed properly in order to assess their say and adequacy to cover and address the issue of compensation to damage resulting from climate change.
3. **Analysis of International precedents.** The approach or jurisprudence of international courts or arbitral tribunal in dealing with or in deciding on relevant cases, if any, will be examined and the necessary inferences will be taken and then suggestion will be made to show the implication or the relevance of the inference in the context of the climate change damage.

1.8. Literature Reviewed

As noted above, literature review is one of the methods that will be employed to accomplish the task of this study. So far an attempt is made to collect relevant literatures and some of those have already been reviewed. According to Maxine BURKET, since climate change damage introduces a great ethical dilemma, for it demonstrate that those who will suffer most acutely are also those who are least responsible for the crisis to date and the international framework is inadequate to give remedy, responsibility to pay compensation can be established relying on the universal ethical principle which dictate that harming others or risking harm to others for one's own gain is wrong.[10] But his analysis is based on moral context not based on liability in international law. According to P. Birnie and A. Boyle there is customary international obligation to prevent, reduce and control transboundary and environmental harm in the territory of other states or in the area beyond their jurisdiction, and if harm occurs, there is obligation to pay compensation.[11] But this discussion mainly focuses on transboundary environmental damage in general and does not look in to the rule in the context of climate change by taking into account its peculiar features. Moreover, Okowa also conclude that there is a

[10] Maxine Burket ,*Supra* note 1
[11] PW.BIRNIE& , ALAN BOYLE, INTERNATIONAL LAW AND THE ENVIRONMENT (2nd ed. Oxford: Oxford University Press, 2002),at104

firm legal basis to hold state responsible to pay compensation for causing transboundary damage, but his emphasis was mainly with respect to damage arising from air pollution.[12]

1.9. Organization of the Study

As stated above the thesis try to explore whether and to what extent there may be a legal basis under international law that justify countries seriously affected or exposed to climate change impacts to claim reparation from industrialized countries that are responsible for causing it. To this end the thesis is divided into five chapters. Chapter one introduces the background of the problem ,the statement of the problem ,research methodologies, objective, scope and significance of the study. Chapter two gives a brief explanation on the conceptual, factual and theoretical frameworks that are relevant for the issue under discussion. That means under this chapter some terms, facts and theories that are important to clarify the subsequent chapters will be introduced and discussed. Chapter three will deal with the nature and status of the international legal regime put in place by the international community to address climate change problem in general and climate change damage in particular. Chapter four show ,despite the gap in the climate change regime, how the general international legal rules and precedent such as the traditional rules of state responsibility and the customary no-harm rule ,could be a legal ground and hence relied upon by vulnerable developing countries to justify their reparation claim for climate change damage. In this chapter an effort will be made to disclose the various factual and legal uncertainties that the vulnerable developing countries will face in establishing the responsibility of developed countries for climate change damage. The last chapter, by way of conclusion, forwards those measures that should be taken by the international community to meet the reparation needs of vulnerable countries.

[12] N.P OKOWA, STATE RESPONSIBILITY FOR TRANSBOUNDARY AIR POLLUTION IN INTERNATIONAL LAW (Oxford: Oxford. University Press, **2000**).

CHAPTER TWO

Reparation for climate Change Damage: Conceptual, Factual and Theoretical Framework

2.1. Definition

2.1.1. Climate change

The reference to the term Climate Change (CC) might not necessarily express a single meaning. The meaning it bears when used in one context-say science might not be the same with the meaning it bears when used in other context say legal. The task here is, thus, to provide the most common definitions and then to indicate the meaning that the term expresses wherever referred throughout this work.

Ever since the existence of the threat of CC secured world wide recognition and became the alarming issue of the international community, it has become a common practice to describe CC in either of the two ways as defined in the United Nations Framework Convention on Climate Change (UNFCCC) and the report of Intergovernmental Panel on Climate Change (IPCC), for these definitions have secured a consensus among the international climate science and law experts. According to IPCC, the term climate change 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"* [13]

However, this definition is different from that stated in the 1992 UNFCC, where it is defined as:

[13] IPCC, 2007: Summary for Policymakers. In: *Climate Change 2007: The Physical Science Basis. Contribution of WorkingGroup I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* at30. For more information on IPCC refer to section 1.2.

> *…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.* [14]

Comparison of these definitions depicts that they contain both common and differentiating elements. To start with the common element, both are circular in the sense that both express CC as climate variability without saying anything as to what it is meant by the term climate (system). There is, thus, a need to clarify it so that the above definitions would be complete. The Earth's climate system is described as:

> *…an interactive system consisting of five major components: the atmosphere, the hydrosphere, the cry sphere, the land surface and the biosphere.* [15]

When this definition is considered together with the above definition, CC means, therefore, nothing but the variability of these five major components.

On the other hand, the elements that differentiate them is that the IPCC defines it in broader manner than the other by describing the term as the variability of the five major components caused both by natural factors and human activities. But in the UNFCCC, it is defined in restrictive manner only to refer to climate variability that is directly or indirectly attributed to human activities. Since the objective of the thesis is to inquire whether there is state(s) which by its act cause CC and then should be held responsible for the damage inflicted on others, the phrase climate change is referred throughout the thesis bearing the meaning as it is defined in UNFCCC i.e. climate variability due to anthropogenic activities and hence it is synonymous with the term global warming

The other term that need to be defined is climate change damage (here in after referred to as CCD). However unlike CC, there is no attempt to provide express definition for CCD in both the reports of IPCC and UNFCCC. Moreover, despite its frequent use in several literatures, no effort is made to define it beyond listing those things that are considered to be adverse effects of climate change. Adverse effects of climate change means changes in the physical environment or biota resulting from climate change which have significant

[14]S UNFCCC, *Supra* note5 atArt.1.2.
[15] IPCC, working group I, climate change 2001: the scientific basis at87

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. [16] Indeed, relying on the above discussion, it may be possible to describe CCD as nothing but damages and /or loss associated with the adverse effects of climate change. What these adverse effects and the consequential damage will be discussed under section 1.2.

2.1.2. Reparation

Reparation issue is one of the most often discussed principles in both domestic and international legal systems. As a result, it has been extensively described and theorized. What should, however, be clear is the aim here is not to discuss the diverse understandings of the term; but rather to articulate a definition that works for the thesis.

Reparation claim can be justified whenever a person inflicts harm on other. In this context, reparation may be described as the act of returning wronged individuals to the *status quo ante* or if not possible compensate victims for their injuries.[17] This definition is backward looking, for it defines reparation as redress for already occurred injury. This way of perceiving reparation is irrelevant when talking about CCD simply because it misses or does not consider the unique nature of CCD. Even if as it is indicated in the following sections some adverse effects of CC with accompanying damage are occurring now, most of them are unrealized risk of damage that are expected to occur in the near future with high certainty. Therefore, there is a need to provide redress for these materially unrealized risk of damage at least to minimize the magnitude of the future harm by taking prior action before the risk cause actual harm. For this reason, throughout this thesis, the term reparation refers to any effort to assess the harm caused by the past emissions of the major polluters and to improve the lives of people in the climate vulnerable countries through direct programs, policies and/or mechanisms for significant resource transfers, to assure the ability of people in the climate vulnerable countries to contemplate a better livelihood in light of future climate challenges.[18] This definition

[16] UNFCCC ,*Supra* note 5 at Art .1
[17] Reparation, Wikipedia, the free encyclopedia, available at http://en.wikipedia.org/wiki/reparation-clegal/. Last visited on 13July ,2010
[18]Maxine Burket ,*Supra* note 1 at15.

incorporates both the backward and forward looking nature of reparations claims which perfectly fit with the types of redress that should be sought and provided for CCD.

2.2. Existence, Cause and Adverse Effects of Climate Change: surveying the Problem.

Since we are living at a time when climate change is the most talked about issue, it is proper to ask whether there is a change in climate system due to human activities. And what are the adverse effects thereto, if any?

The international community first began to discuss CC in the mid-1970s. In a response to a growing concern, the World Meteorological Organization (WMO) formed the ad hoc panel of experts on CC and supported the First World Climate Conference in 1979.[19] Nine years later, in the face of differing scientific information on climate change, WMO and United Nations Environmental program (UNEP) joined to form the Intergovernmental Panel on Climate Change (IPCC) to provide internationally co-coordinated scientific assessments of the magnitude, timing and potential environmental and socio-economic impacts of CC and realistic response strategies.[20] The IPCC has three working Groups (WGs); WGI assesses the physical scientific aspects of the climate system and climate change; WGII assesses the Vulnerability of Socio-economic and natural systems to CC, negative and positive consequences of CC, and options for adapting to it, and WGII assesses options for mitigating CC through limiting or preventing GHG emissions and enhancing activities that remove them from the atmosphere.[21] Since its formation, the IPCC has released four assessment reports in 1990, 1995, 2001 and 2007. Much of the discussion here and some where else in the thesis heavily rely on these reports as they give an integrated view of CC.

The scientific community agrees that the earth's climate is changing. The IPCC has concluded that:

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[19] Rebecca Elizabeth Jacobs, *Treading Deep waters: Substantive Law Issue in Tuvalu's Threat to Sue the United States in the International court of Justice, 14PAC. RIML.&POL'Y J.103,108(2005*)
[20] *Id.*
[21] Intergovernmental Panel on Climate Change: about IPCC, available at http://www.ipce-ch/about.htm. last visited on 20June,2010

> *Warming of the climate system is unequivocal, as is now evident from observation of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level.*[22]

According to IPCC fourth assessment report (AR4), the earth has already seen an increase in global surface average temperature of 0.74^0C over the 100 years up to 2005.[23] Global warming is expected to continue through the 21th century. IPCC produced a range of projections of what the future increase in global mean temperature might be; projections spanned a range due to socio-economic uncertainties e.g. over future GHG emission levels, and uncertainties with regard to physical science aspects, e.g. the climate sensitivity.[24] Climate model projections summarized by the IPCC using a range of future emission scenarios, estimate that further increase of 1.1.-6:4^0C (2-115^0F,) in global average surface temperature is likely during the 21th C. [25]

IPCC concluded as early as 2001 that much of the warming over the last 50 years is 'likely' to have been due to the increase in GHG concentration.[26] In its most recent 2007 report, the IPCC's level of certainty increased to 'very likely' (i.e. greater than 90%) that human caused increase in GHGs were the cause of observed global warming.[27] However, there are many scientists who have contested the findings of the IPCC. Many of them believe that the increased release of carbon dioxide in the twentieth century has no connection to global warming.[28] In contrast to the IPCC's findings that the atmosphere augments the impact of carbon dioxide leading to increased temperature, these scientists hypothesize that the atmosphere offsets increasing carbon dioxide, resulting in no temperature change and they also point out that there are a number of things affecting

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[22] IPCC, *Supra* note 13 at5.
[23] Ibid of course, this is a global average. Temperature increase for greater than this average have been experienced in some parts of the world. *Id*.at7
[24] *Id*. at12.
[25] *Id.* at13, noting that the best estimates for low scenario is 1.8^0c(likely range is 1.1-2.9^0c/ and the best estimate for the high scenario is 4.0^0c (likely range is 2.4-6.4^0c).
[26] IPCC ,Supra note15, p.10. The expression used to indicate the probability of occurrence by IPCC is its reports are. "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' –more than 66%., 'more likely than not '-more tan 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 %. See IPCC,*supra* note 13 at27.
[27] IPCC ,*Supra* note13 at10
[28] Rebecca Elizabeth Jacobs ,*Supra* note 19 at110

climate change whose effects on global warming are yet uncertain, including water vapor, specifically, clouds in the atmosphere.[29] However, the contradictory scientists are only a minority and there is now little doubt that CC is real and caused by human activities, particularly emission of Co_2 from fossil fuels. Connection between anthropogenic activities and CC is furthermore confirmed in the preamble to UNFCCC that states:

> *…human activities have been substantially increasing the atmosphere concentrations of green house gases that these increases enhance natural green house effect.* [30]

An acknowledgment of the human factor to CC have also in addition made by the parties to the UNFCCC in Article 2 which can be understood from the expression '…prevent dangerous anthropogenic interference with the climate system.'[31]

From the above discussion, therefore, it is safe to conclude that climate change is now taking place due to man's own action.

The key issue is, therefore, whether that temperature increase has an impact, for example, on human health and the environment. Indeed, in order to give full picture on the severity and the likelihood of the risks that CC poses on the international community, it requires making detail discussion of those impacts caused by CC. However, since doing so is too vast to easily comprehend in this short sub chapter, the writer opted to make a bird's eye view of the problem just to give some insight on those adverse effects that CC is producing or expected to produce.

In 2001, the IPCC concluded that CC was already having a discernable impact on many different environmental systems.

> *Available observational evidence indicates that regional changes in climate, particularly increases in temperature, have already affected adverse set of physical and biological systems in many parts of the world. Examples of observed changes include shrinkage of glaciers, thawing of permafrost, later freezing and earlier break-up of ice on rivers and lakes, lengthening of mid to high latitude growing seasons, pole ward and*

[29] Id.
[30] UNFCCC ,*Supra* note 5at preamble paragraph .2
[31] *Id*.at Art. 2

altitudinal shifts of plat and animal ranges, declines of some plants and animal populations, and earlier flowering of trees, emergence of insects and egg laying in birds.[32]

Thus, the observed significant impact from CC includes sea level rise, reduced snowpack and resulting water scarcity, regional change of the type and extent of forest cover changes in precipitation amounts, ocean acidification, increased desertification, biodiversity loss, and loss of permafrost, increased frequency and intensity of storm events, among others.[33] The 2007 IPCC report concludes that various impact including heat waves, drought, heavy rainfalls, tropical storms, and storm surges ranges from more likely than not" to "likely" to be attributable to human induced CC with the probabilities for all such events increasing over the next century.[34]

The harms from these adverse effects includes loss of homes, livestock and other property, damage to public infrastructure and to coastal settlement, impaired agricultural yields, loss of livelihoods and population displacement; the human health impacts could involve thermal stress and heat-related deaths and illness, proliferation and geographical shifts of infectious diseases, impaired nutrition and other adverse mental and physical health risks.[35]

In the face of these problems of CC, the most urgent issue is how to prevent further accumulation of GHGs and then to implement adaptive measures to limit the harm. The problem with CC is that whatever mitigation measures are adopted, a significant degree of further CC seems unavoidable. As the IPCC explains "Anthropogenic warming and sea level rise would continue for centuries due to the time scales associated with climate processes and feedbacks, even if green house gases concentrations were to be stabilized."[36] There is some kind of consensus that global average temperature must not be permitted to rise more than 2^0C above preindustrial levels in order to have safe climate system even if small island states contend that temperature increase more than 1.5^0C is

[32] IPCC, summary for policymakers, climate change 2001: working group II ;Impacts, adaptation, and vulnerability, at3
[33] IPCC ,*Supra* note 13 at7
[34] *Id*.at8-9.
[35] IPCC ,*Supra* note 32 at14
[36] IPCC, *Supra* note 13 at16.

dangerous for them.[37] However there is some suggestion that those emissions that were made in the past already have the potential to make temperature increase in excess of 2^0C.[38] The best current estimate is that a doubling of Co_2 from preindustrial levels would result in a temperature increase between 1-5^0C and 4.5^0c by end of this century. [39]For this reason, even in the best case scenario, the world will face a number of adverse impacts from CC. Thus, in parallel with further CC, it is also true that further CCD is unavoidable even if ambitious mitigation and adaptation measures were taken. According to IPCC:

> *There is high confidence that neither adaptation nor mitigation alone can avoid all climate change impacts. Adaptation is necessarily both in the short term and longer term to address impacts resulting from the warming that would occur even for the lowest stabilization scenarios assessed*[40]

This indicates that adaptation measures will help to reduce some of the future loss and damage that will result from increasing temperatures. But even ambitious mitigation measures will not be enough to prevent further damage to those most vulnerable to the impacts of CC. But this doesn't mean that significant adaptation and mitigation measures were unnecessary; unless significant mitigation and adaptation efforts agreed and implemented urgently ,CC will lead to further and unimaginable damage around the world. As the result of this reality, it is possible to divide for the purpose of reparation claim; all damages and/or loss that CC bring about into three categories. The first type refers to some foreseeable loss and damage that will be avoided due to the mitigation of GHG emissions or timely adaptation measures and this is called avoidable damage avoided.[41] The second type refers to some foreseeable loss and damage that will not be avoided, due to insufficient mitigation efforts and delay in accessing adequate adaptation funding and technologies or challenges in institutional capacity and this is called

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[37] Daniel Bodansky, The Copenhagen Climate Change Conference: A Post Mortem, 2010, university of Georgia. School of law at5-6, available athttp://www.fao.org/fileadmin/user_upload/rome2007/docs/Copenhagen_Climate_Change.pdf last visited on 15May,2009

[38] Roda verheyen and peter Roderick, Beyond Adaptation: The legal Duty to Pay Compensation for Climate Change Damage, 2008 at9, available at http://www.wwf.dk/dk/Service/Bibliotek/Klima/Rapporter+mv./beyond+adaptation last visited on 1April,2010

[39] Daniel A. Farber . *Basic Compensation for Victims of Climate Change*, 155 U. PA. L. REV. 1605,1606 (2007)

[40]IPCC, *Supra* note13 at15

[41] Roda verheyen and peter Roderick, *Supra* note 38 at11

avoidable damage and loss not avoided.[42] In other words, it express a types of damage that occur where the avoidance of further damage was possible through adequate mitigation and/or adaptation, but where adaptation measures were not implemented due to financial or technical constraints. The third category is called unavoidable damage and loss and refers to damage that could not be avoided through mitigation and/or adaptation measures.[43]This category includes, for example, land that has been and will be lost due to sea level rise, agricultural land lost to persistent drought, and lives that have been and will be lost due to increasingly severe extreme weather events. The final two categories are the basic concerns of this thesis as they are those things that have the potential to give rise claim of reparation for vulnerable countries in the context of CC.

In order to appreciate the magnitude of the problem posed by CC, it is important to see the global costs of climate change. Various estimates exist and provide different numbers. Even if there is some slight difference in these estimates, the global costs of CC is mostly estimated at approximately 2.4 of global GDP or approximately $30 per ton of carbon.[44] More recently, a study commissioned by the UK government known as the *Stern Review* and released in October 2009 places the costs of CC under business as usual scenarios at 5% of global GDP, with more pessimistic assumptions putting the loss at 20% of GDP by the end of the century.[45] Assuming a global GDP of roughly $ 20 trillion, the estimated annual impact range from $500 billion to $4 trillion. To sum up the above discussion make it clear that the existing scientific consensus now accepts that CC is happening, caused by human activities and is resulting in specific injuries or will do so in the foreseeable future.

2.3. Emitting nations and vulnerable countries

The aim of this section is mainly to disclose those countries that are the major emitters of GHGs and the most vulnerable to the adverse effects of CC, thereby to identify those countries that may have the potential to be found responsible to give redress for climate change damages and the potential claimants thereto.

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[42] *Id.*
[43] *Id*.
[44] David Hunter and Janes Salzmen, *Negligence In The Air: The Duty Of Care In Climate Change Litigation,* 155U. PA. L. REV.1741,1761(2006-2007).
[45] *Id*.

2.3.1. Emitters

Those things that are called GHGs include, but not limited to, carbon dioxide, methane, and Nitrous oxide. However, Co_2, which has a large emission growth and has the largest warming effect, can be claimed to be 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 as the result, the foremost source of Co_2 emissions have seen the use of fossil fuels.[46] Tables 1 and 2 show us annual and cumulative emissions level of major emitters, respectively.

Table 1 share of Global emissions 2003 & 2004[47]

	2003	2004
United States	22.7%	22.09%
OECD Europe	16.95	16.3%
China	15.3%	17.5%
Japan	4.9%	4.7%
Africa	3.5%	3.4%
Russia	4.2%	4.2%

This table shows the flows i.e. how much a given nation emits on an annual basis. As early as 2003, the United States and OECD Europe were as the top emitters accounting for nearly 40% of the world's total.

[46] IPCC ,*Supra* note 13 at36
[47] Department of Energy, international Energy out look, 2007, available at www.eia.doe,gov/oiaf/ieo/index.htm Last visited on 3August ,2010

Table 2 Cumulative Emissions (1850-2003) [48]

	Co2	Rank	share
United States	318,740	1	29%
China	85,314	4	8%
European Union	286,764	2	26%
Russia	88,320	3	8%
Japan	45,198	7	4%
India	24,347	9	2%
Germany	78,499	5	7%
United Kingdom	64,348	6	8%
Canada	23,375	11	2%
south Korea	23,378	23	1%

This table demonstrate the stocks or the cumulative emissions of major emitters i.e. how much a given nation has over time, contributed to the existing GHGS in the atmosphere. Between 1850 & 2003, the developed world contributed approximately 75 percent of the cumulative global emissions of Co_2. The 27 countries comprising the EU have contributed 26 percent of the world total while the US alone is responsible for 29 percent. This demonstrates that the developed countries have made or are making disproportionate historical and present day emissions of GHGs. Even if China were as early as 2004, the second top emitter, it drops to a distant fourth in rank regarding cumulative emissions. The reason for those disparities is that GHGs dissipate very slowly, so countries that industrialized earlier have contributed more to the stock than countries that industrialized later, even though the latter might today contribute more on an annual basis. About half of Co_2 emitted in 1907 still remains in the atmosphere. If by some miracle the world suddenly stopped emitting Co_2 today, the stock of Co_2 in the atmosphere in 2107

[48]Green House Gas Emission Drivers: Population, Economic Development and Growth, and Energy Use, april24, 2007 at24,available at http://ncseonline.org/nle/crsreports/07may/rl33970.pdf. Last Visited on 3 August, 2010 .CO_2 is in mega tons. The emissions data reflect only CO_2 from fossil fuel combustion and not from other activities.

would remain at about 90% of what it is now.[49] That is why it is stated that rich nations owed to low income nations significant ecological debt due to the disproportionate historical emissions of GHGs. [50]

2.3.2. Vulnerable Countries.

We have discussed that there is disparities among world nations in their historical contribution to the atmospheric concentration of GHGs. The point here is whether there are variations in the level of vulnerability among world nations as are variations in emissions levels. If variations exist, which nations are expected to suffer most from climate change? It is a well accepted fact that the impacts of CC are experienced unevenly, with vulnerable countries set to suffer first and worst.[51] According to IPCC, vulnerable countries describe those nation- states that have a particularly acute vulnerability to present and forecasted climate change.[52] This definition indicates that there are countries that are particularly vulnerable to the adverse effects of CC. The question is, therefore, what are these particularly vulnerable countries? Even if the term 'particularly vulnerable' is frequently mentioned in UNFCCC, it is nowhere defined in the Convention. A number of vulnerability factory have been identified under article 4.8, but his would include almost all developing countries.[53] This lack of clarity has led parties to agree that it is necessary to identify particularly vulnerable parties in order to implement Article 4.4.[54] It is understood that no such list has been made which leaves open the question as to which developing country parties are 'particularly vulnerable' under the Convention

Despite lack of precise figures it is generally agreed that CC hit the poorest nations unfairly and disproportionately as the growing evidences indicates.. But the wealthy

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[49] IPCC ,*Supra* note 13

[50] U. Tharis sriniversal, The Debt of Nations and the Distribution of Ecological Impacts from human activities, 2008 proceedings if the national academy of sciences at1968.

[51]IPCC, Supra note 13 at2

[52] IPCC, 2007: Summary for Policymakers. In: *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Chang* at12.

[53] UNFCCC, Supra note 5 at Art 4.8, some of the vulnerability factors mentioned under this sub-article are: small island states, countries with low-lying coastal areas, countries with areas prone to natural disasters, counters with areas liable to drought and desertification, countries with arid and semi-arid areas, etc.

[54] Report of Cop, FCCC/Cp/1995/Add.1, para.1 (d).

nations are in a much better position. As early as 2001, it was recognized that the IPCC stated "the countries with the fewest resources are likely to bear the greatest burden of CC in terms of loss of life and relative effect on investment and economy". [55]Thus, the poorest nations are the most vulnerable to the impacts of CC for the following reasons. First, the economic system on which the poorest nations largely depends on dry land agriculture, coastal system, and fisheries, sectors that are highly vulnerable to CC.. Secondly, the poorest nations lack the resource to protect themselves against the adverse effects by taking adaptation measures; thirdly, geographically, the poorest nations are generally located in low and warmer latitudes, which increase their vulnerability.[56]

The second part of the fourth Assessment report of IPCC provides an assessment of observed and future impacts of CC in different world regions. The report projects with high degree of certainly that the poorest nations of Africa, small island states, and countries with low coastal areas will continue to be particularly hard hit as it can be observed from the following indicators taken from the report.

> *On the African continent, between 75 and 250 million people are projected to be exposed to an increase of water stress due to climate change by 2020. Agricultural production, including access to food, is projected to be severely compromised. This will adversely affect livelihoods, food security and exacerbate malnutrition through out the entire continent.*
>
> *In Asia, glacier melt in the Himalayas is projected to increase flooding and to affect water resources within the next two to three decades. This will be followed by decreased river flows as the glaciers recede. Fresh water availability in central, south, East and South East Asia will be at greatest risk due to increased flooding from the sea and from the rivers.*
>
> *Small Island states, whether located in the tropic or higher latitudes, are especially vulnerable to the effects of climate change, a rise in sea level and extreme events. The rise in sea level is expected to exacerbate inundation, storm surge, erosion and other coastal hazards, thus threatening vital infrastructure, settlements and facilities that support the livelihood of island communities*[57].

[55] IPCC ,*Supra* note 32 at8
[56] *Id*. at14 and see also IPCC ,*supra* note 52.
[57] IPCC ,*Supra* note 52 at10

Small island states are among particularly vulnerable countries. Indeed, the particular vulnerability of small island states resulted in special recognition within the UNFCCC. Due to sea level rise, and other adverse effects from it, worsening coastal conditions, through erosion of beaches and coral bleaching are expected to affect local resources like fisheries, and reduce the value of island destination for tourism. For low-lying coral islands of the pacific and Indian oceans, which despite their small size, are densely populated, the lack of high land retreat is forcing entire people to consider abandoning their ancestral lands.[58] Therefore for small island stales, climate change is an issue of survival.

The IPCC report also shows that Africa and countries with low-lying coastal areas are the biggest losers from the adverse effects of CC. To get the grasp of the problem, in addition to the reports of IPCC, let's consider the following table that show the prominent estimates of how the harms are likely to vary across nations and regions assuming that warming will be 2.5^0C.

Table 3. Damages of a 2.5^0C warming as a percentage of GDP. [59]

India	4.93
Africa	3.91
OECD Europe	2.83
High-income OPEG	1.95
Eastern Europe	0.71
Japan	0.50
Unite States	0.45
China	0.22
Russia	0.65

[58]Maxine Burket, *Supra* note 1 at31
[59] Eric A. Posner & Cass R .Sunstein, *Climate Change Justice*, 96GEO.L.J.1565,1580(2007-2008)

Of course, these estimates are only indicative. It is difficult to have a conclusive understanding of the effects of CC on different regions of the world. Because nations are economically interdependent, significant adverse effects in some regions would probably have a major impact on other regions. But the above estimates demonstrate that some nations are far more vulnerable than others. For example, the united stated, China and Russia are expected to lose relatively little from 2.5^0C warning; indeed Russia is expected to gain, for example, due to increasing agricultural productively and better health conditions from warmer climate.[60] By contrast, India and Africa are anticipated to be massive losers. India is expected to experience devastating loss in terms of health and agriculture. In terms of health alone India has been projected to lose 3,600,000 years of life because of climate related diseases, with 769,000 life lost from malarias. When we see Africa, sub Sahara Africa alone has been projected to lose 26,677,000 life because of climate related diseases, with 24,385,000 coming from malaria.[61]

To sum up the above discussion has made it clear that the affluent nation are by for the largest historical and present day emitters but the heavily impacted victims are poor nations whose past and present emission is negligent or virtually nothing. Due to this, climate change problems demonstrate a grand irony: those who suffer most acutely are also those who are least responsible to the crisis to date. This fact makes the case for reparation for climate change damages much stronger.

2.4. Theories that justify Reparation for Climate Change Damage

There are theories that favor that damage caused by climate change should be repaired by one who caused it. The following are the most common theoretical grounds that support the appropriateness and also demonstrate the objective of reparation for CCD.

2.4.1. Corrective Justice (CJ)

According to this theory one who causes a wrongful injury to another is obliged to compensate the other for the injury caused.[62] That is, CJ imposes a duty on the agent who has acted wrongfully and thereby caused loss to other, to repair the loss. In the context of

[60] *Id*. at1581
[61] *Id*.
[62]Mathhew Paterson, Principles of justice in the context of Global climate change at 121 ,available at, http://graduateinstitute.ch/webdav/site/iheid/shared/iheid/800/luterbacher/luterbacher%20chapter%206%20106.pdf last visited 3Augest , 2010

climate change, CJ hold that the largest emitters, such as the affluent nations, have wrongfully harmed the rest of the world by emitting GHGs in vast quantities and as a result, they have a special obligation to provide redress to the victims or to remedy the harms they have caused.[63] Thus, reparation is justified for CCD in order to make good the wrongful harms inflicted and accordingly, the objective of reparation is to restore moral balance by rectifying harms.[64] These are both strong ground of objections and support raised among commentators on the relevance of CJ to justify reparation for CCD.

Those who argue against the relevance of CJ raised the following objections. The First objection relates to the issue of culpability. In contrary to the view that consideration of CJ warrant reparation for CCD, the opponents argue that CJ requires fault in the form of either intentional wrongdoing or negligence and issue of CCD does not meet this element simply because, first, engaging in GHG emitting activities is not to intentionally cause harm; rather it is a byproduct of activities that do not have global warming as their very objective; furthermore, they argue that given the uncertainty about the cause and consequences of global warming, it will be very difficult to show that GHG emitters are negligent i.e. they knew or should have known that any damage would result from their emissions.[65] The counter argument to this objection is raised by the proponents of CJ by saying that even if emission of GHG were not made with intent to cause harm to others, it is certain to find the culpability of emitters at least after 1992 by pointing that on this date both the developed and developing nations have entered a framework agreement to reduce HGGs and as the result, the international community had clearly identified the harm; any source of emissions after that date was negligent because it was made at least on notice of the damaging nature of the conduct. [66]

Those who argue that CJ is a poor fit with the CC problems also raised other objection that CJ requires an identify between wrongdoer and the defendant: the person who did the wrong must be the same as the person against whom reparation is claimed and but the

[63] Eric A. Posner & Cass R .Sunstein ,*Supra* note 59 at1592
[64] Daniel A. Farber, *Supra* note 39 at1641
[65] Mathew D. Adler, *Corrective Justice And Liability For Global Warming, 155UPA*.L.REV.1859,1862(2006-2007)

[66] Daniel A. Farber, Supra note 39 at1641-1642 and infra note 69 at389.

fact with CCD is the current stock of GHGs in the atmosphere is a result of the behavior of people living in the past or people who were dead, and dead wrong doers can not be held responsible for their behavior, or forced to compensate those they have harmed.[67] They further argued CJ does not justify holding people living today responsible for the activities of their ancestors because current people are not the relevant wrong doers and therefore should not be responsible for the harm.[68] The defense presented to this objection is that all or most people living today benefit from GHG emitting activities of people living in the past and in addition, taking the 1990 as the plausible date that wrongfulness of GHG emission become clear, most people who were living at that time are living today with old age and accumulating more wealth they generated from GHG emitting activates, and therefore, it would not be wrong to require current people to pay for CCD.[69]

The other related objection is that CJ requires identity between victims and claimants: the person who is injured by the wrong doer must be the same as the person who has a claim against the wrong doers. and also, they said that CJ is backward looking only applies for materially realized harms and in case of climate change, most of the victims live in the future as most of the adverse effects are foreseeable future risks and for this reason, CJ is a poor candidate to support reparation for CCD in the face of future victim and unrealized risk of future harm.[70] The defense to this objection is that it is not appropriate to stick to the traditional formulation of CJ. In the context of climate change, "the need for adaptation is certain rather than contingent, at least for the next few decades its seems appropriate to say that the creator of the risk has no responsibility for the need of precaution; it seems entirely reasonable and prudent to require some one who would be liable if a risk materialized should also be liable for the costs needed to avoid the risk".[71]

The relevance of CJ to justify reparation for CCD is also contested on the ground that CJ only justify compensation for harm to privately owned property and most of harm form CC will be harm to the natural environment and harm to the natural environment is not

[67] Eric A. Posner & Cass R .Sunstein ,*Supra* note 59 at1593
[68] *Id.*
[69] Daniel A.Farber, *The Case For Climate Compensation: Justice For Climate Change Victims In A* Complex *World*, 2008 UTAH L.REV.377,395-396(2008)
[70] Eric A. Posner & Cass R .Sunstein, *Supra* note 59 at1595-1596 and *supra* note 65 at1866-1867.
[71] Daniel A.Farber, *Supra* note 69, at408 and *supra* note 65 at1647-1648.

harm to privately protected interest.[72] The counter argument is that the adverse effects of CC will cause harm to private interest and even in case of harm to natural environment, there is a clear possibility for the governments to receive compensation on behalf of the public interest in these resources; furthermore, they continued to defend their position by arguing that rather than sticking on theoretical discourse, it is more important to emphasis on practical concerns by citing a practical precedent under the international arena that justify compensation for pure environmental resources.[73]

Those who argue against CJ also reject, its application on the ground that saying the wealthy nations should provide redress for severely impacted poor nations as a matter of CJ produce a problem of collective responsibility; since nations are merely collection of individuals, to hold a certain affluent nation responsible to provide redress to other poor nations can burden individuals who are not to blame in order to provide compensation to others who might not actually be victimized "and thus, they argue," crude state-to-state remediation scheme results in innocent being punished and non-victims being compensated."[74] The response to these objections is that it is possible to craft a practical system of compensation or properly tailored measures of liability by placing accountability at the individual level only for the purpose of compensation, for example, through the normal taxation process. Moreover, they also argue that it is reasonable to tolerate certain innocent members of the group to be included in the reparation scheme because of 'the injustice to them (of having to pay a small amount of contribution that they do not really owe) is smaller than the injustice to victims if no compensation is paid." [75]

The other objection related with causation. According to the opponent of the view that CJ can be a ground to warrant reparation for CCD, CJ requires that the wrongdoer cause the harm and however, in the context of climate change, establishing causal connection between any emissions from particular country or source and any specific harm is

[72] Mathew D. Adler ,*Supra* note 65 at1860-1861.
[73] Daniel A.Farber, *Supra* note 69 at409
[74]Eric A. Posner & Cass R .Sunstein ,*Supra* note 59 at1592 and Daniel A.Farber, *Supra* note 69 at396
[75] Daniel A.Farber, *Supra* note69 at397-400

difficult.[76] The response is that the current level of the strength of climate science and its evolution trend is likely to make it possible to link some specific adverse effects with climate change and emission from certain country with considerable confidence. [77]

These and related arguments in favor and against CJ have been forwarded by commentators. Even if these discussion make it clear that the argument from CJ could give rise different and complex question, the fact remains that the developed nations have emitted a disproportionate amounts of GHGs and these gases are causing or will continue to cause harm, particularly to the poorest nations. These facts would form an adequate basis and make it imperative to hold large scale emitters responsible to give redress to the victims, at least to cover the costs of adaptation to minimize the foreseeable and serious harms disregarding the theoretical elusive quarry made by some commentators.

2.4.2. Distributive Justice (DJ)

The argument from distribute justice (DJ) hold that there must have a fair apportionment of the burdens and benefits of risky activities and hence unlike CJ, it is no preoccupied with question of wrongdoing and rectification.[78] In the context of climate change, however, there are basically two different points of view regarding how consideration of DJ could be a ground to justify reparation for climate change damage. The first view is that since climate change will have the cruelest impact on the poorest nations, or since the risk posed by climate change is high and will injure mostly people living in difficult or desperate conditions, the wealthy nations should devote a significant financial resources to help poorest nations simply because resource should be redistributed from rich nations to poor nations and that redistribution would increase overall welfare or promote fairness, for it creates a just distribution of the burden and benefits of CC.[79] Therefore, according to the proponents of this view, it is only distributive goals that justify imposing a special financial burden on wealthy nations that is to be transferred to poor nations to deal with climate change damage. The proponents of this view treats the harms of climate change

[76] Eric A. Posner & Cass R .Sunstein, *Supra* note 59 at1597
[77] Daniel A.Farber, *Supra* note 69 at401-403
[78] Gregory C. keating, Distributive and corrective justice in the tort law of accident, 2000, Southern California law review vol.74, at195 available at www.bcf.usc.edu/~usclrev/pad/074112.pdf. Last visited on 13July ,2010
[79] Mathhew Paterson ,*Supra* note 62

on poor countries as a problem for which the largest emitters bears no moral responsibility.[80]

The proponent of the second view emphasizes on culpability of wealthy nations and argue that consideration of distributive justice is also justify reparation fro climate change damages due to that the largest emitters of GHGs by polluting the environment and consequently harming the poorest nations, they have unjustly prospered at the expense of others. In other words, since wealthy emitters are redistributing income to themselves at the expense of poor countries by their on going damage to the planetary climate system, hence reparation is justified for climate change damage in order to transfer resources unjustly distributed to wealthy nations back to the poorest nation and then to leave distribution of wealth where it would be in the world in which climate is stable. [81]

According to the opinion of this writer, consideration of corrective justice is the primary ground to warrant compensation for climate change damage because CJ requires that the largest emitters have a duty to make financial recompense to the poorest nations as they are expected to be victimized significantly. But distributive justice could be achieved as an effect of corrective justice. This is because the significant financial grant provided to repair climate change damage would have a significant distributional benefit to the extent that it would flow to some of the poorest counties in the world and this would directly advance human welfare.

2.4.3. Deterrence Theory

The argument from deterrence theory is that the doer of certain damage should be held liable to repair the damage he caused in order to alter their behavior and avoid inflicting damage.[82] This theory is based on the economic assumption that when a potential tortfeasor is confronted with economic costs of his action, or when he is only aware of the fact that he may be confronted with the costs of his action he will take a sufficient amount of care in order to reduce or avoid the damages.[83] In context of climate change

[80] Eric A. Posner & Cass R .Sunstein *Supra* note 59 at1584
[81] Daniel A.Farber, *Supra* note69 at404
[82] General principles of tort law at13, available at ftp://ftppeorsoned.ema.com/HPE.samples/.../9781405846943.pdf Last visited on 13July ,2010
[83] Michael G.Faure and Andre NollKaemper, *International Liability As An Instrument To Prevent and Compensate For Climate Change*,43 A STAN.J.INT'L L.123,140(2007)

this theory hold that in order to influence the behavior of the agents that cause GHG emissions or to change the behavior of emitters, repartition should be warranted to the poorest nation from the wealthy nations. Thus, according to this theory, the objective of reparation is to deter harmful conduct, in this case GHG emissions.[84]

According to the opinion of the writer this theory has some truth for the following reason. Even if putting in place an effective regulatory mechanisms is a necessary tool to deter GHG emissions, this has not happened due to lack of political will on the part of the world's major GHG emitters to make significant mitigation commitments. As a result, the existing framework is inadequate to address the problem. Moreover despite knowledge of the consequence of increased carbon out put and their obligations under the UNFCCC and Kyoto protocol, emissions in the developed world have increased significantly, with the US among the top increased emitter. [85] Therefore, when large scale emitters become certain that these is a duty to repair damages caused due to climate change, it would drive them to reduce the risks by agreeing on appropriate international regulatory instrument to rapidly reduce domestic emissions and to finance damage prevention measures in most vulnerable countries. Moreover, establishing a rule that warrant compensation for past emissions can provide a precedent for future potential emitters to take care of their action and to make them more sanguine to establish` adequate regulatory scheme to escape liability.

2.4.4. Social solidarity

According to this theory, reparation should be provided for climate change damage in order to provide redress for social grievances or to exhibit social solidarity with victims. [86] The grievance manifested by victims of climate change damage is potentially destabilizing and can lead to a potential conflicts and political animosity and polarization. Therefore to express solidarity with victims of climate change thereby to restore, or for once establish trust in a just state of affairs, reparation should be provided for victims of climate change damage. In other words, according to proponents of this view, what

[84] Hilary Sigman, *Legal Liability As Climate Change Policy*, 155U.PA.L.REV.1953, 1955-1956(2006-2007) and see also Daniel A. Farber, *supr*a note 39 at1641-41.
[85] Maxine Burket, *Supra* note 1 at6
[86]Daniel A. Farber, *Supra* note 39 at1641 and 1644

justify reparation to be provided to the victims of climate change damage to manifest social solidarity with victims of CC by recognizing the humanity of each individual subject to the harms of excess emission thereby to foster civic trust between nations.[87] Indeed, according to the opinion of the writer due to the reluctance or a sluggish response of major emitters of GHGs in political and legal arena coupled with the disproportionate impact posed against the poor nations, it is likely that individuals in poor nations who will suffer damage due to climate change to be angry and resentful against the global north. Therefore, reparation could give redress to such social grievance and thereby would create social solidarity.

[87] Maxine Burket, *Supra* note 1 at26.

CHAPTER THREE

Climate Change Damage under International Law

3.1. An Overview of the Climate Change Regime

As discussed in chapter one, human-induced CC will affect the future of the planet and human life in numerous ways. This justifies the need for establishing a legal regime that addresses the problem. Accordingly, considering that global climate change is the greatest environmental challenge facing the world today, the international community has devised a legal regime that principally envisions a combined effort of mitigation[88] and adaptation [89] to fight the problem. GHG mitigation is the core principle of the legal regime put in place in order to tackle the problem by reducing or preventing further accumulation of GHG. Moreover, as stated in chapter one, it is a well recognized fact that whether GHG emissions are effectively reduced or not, some degree of climate change is unavoidable in the coming years and decades because of past and current GHG emissions, and this will impose substantial cost on the society in the form of direct harm unless preventive actions are taken, hence implementing adaptation measures become the other priority of the climate regime. Therefore, the main aim of this chapter is to make a brief discussion of those international instruments put in place to regulate GHG emissions and the consequent adverse effects in light of mitigation and adaptation commitments contained in the regime.

3.1.1 United Nations Framework Convention on Climate Change (UNFCCC)

Even if the possibility of man-made interference with the climate system was suggested as far back as the first half of the 19thc, it is only since 1980s that an interest was shown by the international community to establish the necessary legal instruments.

> *As early as 1827, the French scientist Fourier suggested that the earth's atmosphere warms the surface by letting through high-energy solar*

[88] Mitigation refers to the active reduction of emissions of carbon dioxide and other GHGs in addition to increasing the function and reliance on sinks, such as forests, oceans, UNFCCC, supra note 5 at preamble and Article 4(2)(a)

[89] Adaptation emphasizes changing human interaction with the environment to promote less damaging effects. These changes include creating sea walls, moving cities and adjusting housing. See Lakshman D. Guraswamy, International Environmental law in Nutshw, (2nd. ed., 2003) at190.

> *radiation but trapping part of the longer-wave heat radiation coming back from the surface…. At the end of the nineteenth century the Swedish scientist Arrhenius postulated that the growing volume of carbon dioxide emitted by the factors of the Industrial Revolution was changing the composition of the atmosphere, increasing the proportion of greenhouse gases, and that this would cause the earth's surface temperature to rise.*[90]

Thus, knowledge of a greenhouse effect is nothing new. However, it took until 1980s for the phenomena to be on an international agenda. Following the adoption of numerous declarations at several conferences calling for various measures to be taken to reduce the generation of CO_2 and other GHGs, the issue of climate change was brought to the agenda of the UN in 1988, a year in which the United Nations General Assembly (UNGA) passed resolution 43/53 on the Protection of the Global Climate for Present and Future Generation of Mankind, and called for a timely action for the problem, which according to UNGA, "a common concern of mankind', and also endorsed the action of UNEP and WMO in jointly establishing IPCC.[91] Two years later, after considering the first report of IPCC in 1990, UNGA passed Resolution 45/215 that established an Intergovernmental Negotiating committee to develop a legal instrument on climate change.[92] The outcome of a further two years of strenuous negotiations was the 1992 United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC was concluded in New York on 9 May 1992 and was opened for signature in June 1992 as part of the United Nations Conference on Environment and Development (UNCED) in Rio De Janeiro, Brazil; it entered into force in 1994.[93]

Negotiation of a climate change convention proved to be a difficult task. The wide range and complex elements involved in possible climatic effects present a considerable challenge:

> *The economic implications of climate change are much greater. Control of GHGs goes to the heart of energy, transport, and industrial policy in all*

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[90] Benito Muller, The Global Climate change Regime: Taking Stock and looking Ahead, at29, available at www.fni.no/YBICED/02_02_muller.pdf last visited 15 may,2010
[91] David Freestone, The International Climate Change Legal and Institutional Framework: An overviews , at3 ,available at http://ssrn.com/abstract=1481565 last visited 15 may,2010
[92] *Id.*
[93] *Id.*

> *developed states and many newly developing ones. Moreover, the role of carbon sinks means that deforestation, protection of natural habitants and ecosystems, and sovereignty over natural resources are also important elements of the problem.*[94]

Due to these interconnected elements involved and the global character of climate change caused deep differences of opinion among the participating states as to the measures needed and the allocation of responsibility for addressing the problem. Not only was it necessary to acknowledge the differential needs and responsibilities of developed and developing states, but also within each of these groups there are no common positions as it can be understood from the following paragraph.

> *Members of the Association of small Island states, such as Nauru and Vanuatu, which might disappear in the event of modest sea level rise, were much in favor of a strong Convention. Their interests were far removed from those of OPEC oil producers such as Saudi Arabia and Kuwait, whose income and economies could seriously suffer if consumption of fossil fuels by developed states were to be reduced. Neither of these groups had much in common with the larger developing states such as China, Brazil, and India, who were mainly concerned not to limit their economic growth, but had no objection to developed states taking a strong lead. Nor did the developed OECD economies share the same view on the measures that might be needed to tackle climate change. In particular, the USA was not prepared to commit itself to specific emissions reductions on time tables and its opposition resulted in a convention that was significantly weaker than the commitments already undertaken voluntarily by a number of developed states.*[95]

The effort to secure universal participation through accommodating and balancing the diverse interests coupled with the political, scientific and economic complexity of tackling climate change resulted a Convention which is neither a comprehensive law of the atmosphere, nor a fully formed and detailed regulatory regime, but a framework

[94] P. BIRNIE AND A.BOYLE, *Supra* note 11 at523
[95] *Id*.

convention establishing a process for reaching further agreement on policies and specific measures to deal with climate change.[96]

The basic objective of the Convention is not to reverse GHG emissions but to stabilize them 'at a level that would prevent dangerous anthropogenic interference with the climate system'.[97] The Convention does not specify what level of GHG in the atmosphere should be to that end nor does envisage when should stabilization be achieved beyond merely stating that it 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.[98] Article 3 sets out the principles the parties should be guided in their actions to achieve this objective. These include the precautionary principle, the principle of intergenerational equity, principle of common but differentiated responsibility, the principle that to take into account the special needs of developing country parties and of those that would have to bear a disproportionate or abnormal burden under the Convention, as well as the right of all state parties to promote sustainable development, and the need to promote a supportive and open international economic system. It is a nice question to ask what the legal effect of decisions which disregard the principles contained in Article 3 may be. Given their explicit role as guidance, these principles are not necessarily binding rules which must be complied with; their softer legal status is also indicated by the use of the word 'should' throughout this article.[99] However, Article 3 is not without legal effect; of the very least, it is relevant to interpretation and implementation of the Convention as well as creating expectation concerning matters which must be taken into account in good faith in the negotiation of further instruments.[100]

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[96] *Id*. at 524
[97] UNFCCC, *supra* note 5 at Art. 2
[98] Id., Second paragraph. But the Copenhagen Accords Fills these gabs by providing the upper bound on atmospheric concentration of GHGs as 350 or 450 parts per million(By way of comparison, the current concentration of co_2 is about 390ppm)it also set forth a long-term goal to reduce global emission by 50% by 2050 .Daniel Dodansky, Supra note37 at5
[99] P. BIRNIE AND A.BOYLE ,*Supra* note 11 at525
[100] *Id*.

Article 4, which deals with the commitments undertaken by parties to the Convention, is based on the principle of common but differentiated responsibility. One of the principal commitments contained in the Convention is that of mitigation. Under Article 4(1), all state parties committed to make national inventories of GHG emissions and sinks, national and regional programs to mitigate climate change, promotion of scientific and technical cooperation, sustainable management of forests, oceans and ecosystem, preparation to the impact of climate change, and the integration of climate change considerations in social, economic and environmental policies. But the full significance of the common but differentiated principle emerges in Article 4(2) where the developed countries and countries with economies in transition (collectively Annex I parties) undertake obligation to adopt policies and measures on the mitigation of climate change by limiting emission of GHGs and protecting and enhancing GHG sinks and reservoirs so as to demonstrate that industrialized countries are taking the lead in modifying longer term trends in anthropogenic emissions consistent with the objective of the convention. While a number of particular factors are listed, the state parties have obliged to return individually or jointly by the end of the present decades (2000) to earlier levels of anthropogenic emissions (1990) as an indication that they are taking the lead to contribute to such modification.[101] Article 4 also contains adaptation commitments which will be discussed in the next sections. As it can be seen, Article 4(1) is common to all state parties, but Article 4(2) imposes more onerous commitments on industrialized countries. The explicit assumption is that the developed states that have contributed most of the GHG emissions should also contribute most to tackling the problem, both by providing resources and by taking the lead in adopting control measures.[102]

Article 7-11 establish institutional framework of the regime . The Conference of the Parties(COP), as the supreme body, is charged with keeping the implementation of the Convention under regular review and is specifically granted the power to make decisions necessary to promote the effective implementation of the Convention. [103] In addition, the Convention establishes a permanent secretariat and two subsidiary bodies. The

[101] UNFCCC, *supra* note 5 atArt. 2
[102] P. BIRNIE AND A.BOYLE ,*Supra* note 11 at525
[103] UNFCCC, *supra* note5 at Art.7.2

Subsidiary Body for Scientific and Technological Advice (SBSTA) is established, and its role defined by Article 9 and the Subsidiary Body for Implementation (SBI) by Article 10.

3.1.2. Kyoto Protocol

It is stated above that the climate convention is a framework agreement that laid down general rules which need further elaboration. Following the coming into force of the UNFCCC in 1994, the first session of the Conference of the Parties (COP1) was held in Berlin in April 1995 and adopted what has become to be known as the 'Berlin mandate'. [104] By the mandate, the parties concluded that the Annex I commitments in the Convention were inadequate and vague, and agreed to begin a process to take appropriate action for the period beyond 2000. [105] This process was, *inter alia*, meant 'to set quantified limitation and reduction objectives within specified time-frames, such as 2005, 2010 and 2020, 'for Annex I parties, and not introduce any new commitments for developing countries. [106] The ensuing negotiations carried out under the aegis of the 'Ad hoc Group on the Berlin mandate' (AGBM) found their culmination in 1997 at the third session of the COP in Kyoto, Japan, with the adoption of the so called Kyoto Protocol. In accord to the Berlin mandate, the 1997 Kyoto Protocol strengthens the commitments of the 1992 Convention by setting out a firm schedule of reduction of GHGs emissions by Annex I countries and firm target to be met within an agreed commitment period (2008-2012). The protocol envisaged reductions of GHG by develop countries by an average of 5.2% from 1990 levels by 2008-2012[107].

The specific targets (assigned amounts) for each Annex I parties range from Iceland and Australia which were able to increase their emissions from the 1990 base levels (by 10% and 8% respectively) to the countries of the European union which accepted an 8% reduction from 1990 levels. [108]

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[104] Benito Muller, *Supra* note 90 at30
[105] FCCC: the Berlin mandate: Decision 1/cp
[106] *Id*.
[107] Kyoto Protocol to the United Nations Framework Convention on Climate Change , 10 december 1997,fccc/cp/1997/l.7/Add.1, Decision 1/cp.3, 37 I.L.M.,at Art.3.1
[108] *Id*, Annex B

Since 1990 many of the Annex I countries had substantially increased their GHG emissions through growth in their economies. The commitment to reduce emission below 1990 levels is more rigorous, and the potential economic impacts of these obligations are significant. However, the most innovative aspects of the Protocol is the introduction of the so called market mechanisms, or sometimes called flexibility or Kyoto mechanisms to efficiently meet the reduction commitments through cooperation among Annex I parties. [109] Of course, some degree of cooperation is envisaged by the 1992 Convention itself which Article 4(2) (b) talks of the aims of returning GHG emissions individually or jointly, to their 1990 levels. The wording of the 1992 Convention is echoed in article 3(1) of the Protocol which reaffirms that these commitments may be made individually or jointly. Under Article 4 of the Protocol, two or more states listed in Annex I of the Convention may agree to fulfill their protocol commitments by aggregating their combined emissions provided these are within the total assigned limits for those states as a group, it does not matter that some of these states exceed their individual emissions limit. This provision is inserted at the request of the European Union to enable its less developed members to increase emissions at the expense of other members. [110] In addition to this, the protocol defines three flexibility mechanisms.

The first mechanism is Assigned Amount trading. Article 17 allows the trading of parts of assigned amounts or permits among Annex I countries, but the number in calculation would never exceed the total permitted volume of carbon emissions. The second mechanism is joint implementation. Article 6 allows any Annex I country to transfer to /or acquire from, another Annex I country, reduction of GHG emissions, described as Emission Reduction Units (ERUs), generated by any project activities that reduce anthropogenic, removal by sinks of such gases. The third mechanism envisaged is that of the Clean Development Mechanisms (CDM). According to Article 12, Annex I countries can fulfill their emissions limits by financing projects that would result in real, measurable, and long term benefits related to the mitigation of climate change in

[109] David Freestone, *Supra* note 91 at8
[110] P. BIRNIE AND A.BOYLE ,*Supra* note 11 at528

developing countries. These are the mechanisms envisaged by the protocol for Annex I countries meet their emission reduction commitment in cost effective manner.

3.2. Climate change Damage under the climate change regime

3.2.1. Adaptation and funding for Adaptation: The practice for Particularly Developing countries

In addition to mitigation commitments, both UNFCCC and Kyoto Protocol contain provisions relating to adaptation and funding for adaptation aimed at direct damage prevention. Article 4.1(b) of UNFCCC obliges all parties to "formulate, implement, --- national and, where appropriate, regional programs containing … measures to facilitate adequate adaptation to climate change'. There is also an obligation to cooperate in preparing for adaptation pursuant to Article 4.1(e). There is the further obligation to report the fulfillment of this obligation under Article 12.1 of the UNFCCC. Thus, adaptation is not a voluntary undertaking but a substantive obligation on all parties with a view to reducing future CCDs. However, these obligations lack clarity. First, there is uncertainty as to what it meant or constitute 'measure to facilitate' and 'adequate adaptation' and hence need further clarification. Moreover, there is also uncertainty as to when and exactly how the obligation must be met; the provision does not specify the time period in which the duty arises, nor does it set a deadline for either the formulation of the adaptation programs or their implementation. [111]

Even if there is a duty on all parties to the Convention to implement programs containing measures to facilitate adequate adaptation to directly prevent damage, the issue is whether all parties fulfill this obligation in light of the fact that adaptation to the climate change impacts is going to cost a huge amount of resources. Various estimates exist and all of them projected adaptation costs to be in order of billions of dollars per year. For example, Oxfam estimated it as $50 billion per year whereas other study estimated it as $28-70 billion per year in 2030.[112] Since most of the adverse effects of climate change

[111] Krishnendu Mukherjee, A "Hungry Tide": The Legal Response to Climate Change Adaptation, 2008,at 16 available at http://cmsdata.iucn.org/downloads/k__mukherjee__a_hungry_tide_.pdf ,last visited July 20,2010

[112] Roda verheyen and peter Roderick, *Supra* note 38 at13

will affect poor nations, when their limited capacity compounded with the fact that the heavily impacted poor nations contribute least to causing the problem, it would be unjust if vulnerable countries are required to mobilize huge resources simply because that most of adaptation activities are to be carried out in these countries. It seems that considering this reality, the climate change regime contains specific provisions that deal with how the international community should deal with the funding of adaptation in vulnerable countries. Article 4(3) provide an unequivocal obligation that the developed countries listed in Annex II (industrialized countries other than countries with economies in transition) shall provide new and additional financial resources to meet the agreed full costs incurred by developing countries in meeting their communication obligation in article 12 and to meet the agreed full incremental costs in implementing the measures envisaged in Article 4(1). Hence, Article 4(3) demonstrates that there are financial obligations for developed country parties to, *inter alia*, provide financial resources to fund the adaptation measures in Article 4.1(b) and Art. 4.1(e). However, the wordings of the provision are too vague for effective implementation. For example, the concept contained in Article 4.3 that the developed countries should fund only the incremental costs of measures is somewhat problematic for 'incremental costs' are not defined; moreover, what weaken commitment under Article 4.3 is the requirement that funding decision should be made by the agreement between the developing country concerned and the conventions financial entity, that is Global Environmental Facility (GEF), and as a result if GEF reject a project, the developed country parties need not provide a fund. [113]

In addition to Article 4.3, the UNFCCC also further provide that:

> *The developed country parties and other developed parties included in Annex II shall also assist the developing country parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to these adverse effects.* [114]

This provision also clearly provides for vulnerable developing countries with a legal basis to claim funds from developed countries to meet adaptation costs needed to deal with

[113] *Id.* at20
[114] UNFCCC, *supra* note 5 at Art 4.4

climate change damage. Moreover, the Convention also as a reflection of the common but the differential responsibility of the parties, provided that developing countries should or could only undertake adaptation measures when developed countries have provided the means to do so:

> *"The extent to which developing country parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed countries parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country parties."*[115]

However, even if there is no specific reference to any agreement or to incremental costs in Article 4.4, the Convention does not provide any definition to the phrase 'particularly vulnerable'. Moreover, the term 'assists in meeting the costs' lacks clarity. It is unclear about the extent of the funding to be provided and the phrase itself seems to imply that not all the costs should be from developed country parties because 'assist' could be any support provided, even on a very small scale relative to the total cost of the activity. [116]

The other important issue is the funds established and their governance under the climate change regime. The following are the major funds stabilized by the regime:

- Least Developing Country Fund (LDCF) [117]

  It is a development focused fund that provides support to LDC's as they prepare and implement National Adaptation program of Action (NPPA) in which they identify their most urgent adaptation needs.

- Special Climate Change Fund (SCCF). [118]

  It is also a development focused fund concerned primarily with activities, programs, and measures in the areas such as adaptation, technology transfer, energy, transport, investing, agriculture, forestry etc

[115] UNFCCC, *supra* note 5 at Art 4.7
[116] Krishnendu Mukherjee ,*Supra* note 111 at 21
[117] Established by decision 7/cp. 7 para. 6
[118] Established by decision 7/cp. 7 at Para. 2

- Adaptation Fund [119]

  It is established by the Kyoto protocol to fund concrete adaptation projects and programs in particularly vulnerable developing countries to the adverse effects of climate change to assist them meet the costs of adaptation and would be financed by a share of the proceeds of Clean Development Mechanism (CDM) project activities and by other voluntary contributions. But the first two funds are totally financed by voluntary contribution. [120]

The question to be addressed here is who is charged with managing these funds. The chief modality for the mobilization of the new financial resources required by the convention is the financial mechanism defined by Article 11 that will provide financing a grant or a concessional basis. The mechanism is to function under the guidance of and be accountable to, the conference of the parties, but its operation shall be entrusted to one or more existing international operation.[121] The convention also specifically provides that the financial mechanism shall have an equitable and balanced representation of all parties within a transparent system of governance. [122] To this end, the interim arrangements set out in Article 21(3) specifically designate the Global environmental Facility (GEF) as the international entity entrusted with the operation of the financial mechanism but only 'on an interim basis' and require that it be appropriately restructured and its membership made universal to enable if to fulfill the requirements of Article 11. [123] Even if the developing countries were concerned about the attachment of the GEF to the World Bank for fear that the funds would fall on the hand of US as it is the major contributor of the World Bank, currently the GEF operates the first two funds i.e., LDCF and SCCF. [124] However, due to pressure from developing countries to make the Adaptation Fund

[119] Established by decision 10/cp. 7, Para. 2 and by Article 12 of the Kyoto protocol
[120] Roda Verheyen & Peter Roderck ,*Supra* note 38 at 12
[121] UNFCCC, *supra* note 5 atArt.11.1
[122] *Id.* atArt.11.2
[123] The GEF was established as a joint project of UNEP, UNDP and the world Bank in 1991 to advice the financial needs to fight biodiversity loss, climate change, degradation of international maters and ozone depletion-the four focal areas-*supra* note 24 at 22
[124]Krishnendu Mukherjee ,*Supra* note 111 at 22

independent from GEF, it was decided at Bali to entrust it to separate Adaptation Fund Board. [125]

Despite the establishment of several funds, however, on global level there is large disparity between the needs as identified by the climate change regime and the resources for adaptation available from the international funds. Even if the funds needed for adaptation are estimated to be in the order of tenth billion of dollars per year, what is currently available is only in order of millions of dollars. [126] For instance, the amount of money available in the existing funds, including Adaptation Fund, amounts to USD 275 million as of August 2007. [127] This indicates a serious shortfall in funding for direct damage prevention for developing countries. One reason could be that funding pledges made are not directly connected to any concrete assessment of the actual aggregate adaptation needs of developing countries. [128] Of course, as stated above even the wording of the provisions of the Convention foresees only partial funding of adaptation measures by developed countries. Moreover, even though the funding provisions of the climate change regime are mandatory, thus far, funding is made available on political basis without attaching it to legal responsibility. [129]

3.2.2. Responsibility for Climate Change Damage

As it is discussed above the UNFCCC and the Kyoto Protocol contain commitments on the mitigation of GHG emissions and on adaptation to the adverse effects of climate change. However, the reality with climate change is that regardless of adaptation measure taken, damage will occur. It is stated in chapter one that even if it is true that whatever adaptation measures taken cannot avoid all climate change impacts, it is also evident that appropriate adaptation measures will help to reduce the future loss and damage that will result from climate change i.e. lack of sufficient and timely implementation of adaptation measures will lead to further and significant damage around the world. It is also

[125] *Id.* at23
[126] Roda verheyen and peter Roderick, *Supra* note 38 at12-13
[127] Krishnendu Mukherjee, *Supra* note 111 at 24
[128] Richard S.J. Tol and Roda Verheyen, State Responsibility and Compensation for Climate Change Damages: a Legal and Economic Assessment, at1115, available at http://www.mi.uni-hamburg.de/fileadmin/fnu-files/publication/tol/enpolliability.pdf Last Visited on 1 April,2010
[129] *Id.*

discussed above that even if the climate change regime contains commitments on adaptation and funding for adaptation, the funding architecture has been plainly inadequate to generate the funding needed for adaptation and as a result, adequate and timely adaptation measures are not being implemented or unlikely to be implemented in the near future. This in turn cast doubt that even establishing effective funding mechanism for adaptation measure in the future can bring the desired effect in preventing climate change damage due to that the current climate forecasting suggests that many adaptation measures are rapidly becoming out dated and quaint. [130] Hence, it becomes inevitable that in the near future vulnerable countries will be impacted by significant loss and damage from climate change. Therefore, for the climate change regime to be more complete or effective, it is imperative for it to include a rule that addresses the issue of responsibility for the unavoided and unavoidable damages or simply for residual damage in order to give recourse to the vulnerable countries against those caused it. The question that can arise in this regard is whether and how the climate change regime governs the issue of responsibility for damage caused due to climate change. The fact, however, is that both the UNFCCC and the Kyoto Protocol contain no pertinent or direct provisions that define climate change damage, or deals with the question of how such residual damages, if they occur, should be compensated. Of course, there was a request by some states during the negotiations to include a provision that deals with how residual climate change damage occurred irrespective of adaptation should be born among world nations. [131] But this was rejected by developed states and hence the negotiating parties decided to focus on mitigation of climate change, instead of responsibility and compensation. [132] Therefore, the Convention and the Protocol do not contain provision or envisage a mechanism that demonstrate acknowledgement of responsibility by industrialized states to compensate vulnerable countries in meeting the cost of adaptation. The decline to accept responsibility forced several states, upon signature of the UNFCCC and the Kyoto Protocol, to make the following declarations:

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[130] Maxine Burket ,*Supra* note 1 at8

[131] PHILIPPE SANDS, PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW (2nd ed. Cambridge University Press, 2003), at91

[132]Richard S.J. Tol and Roda Verheyen, *Supra* note 128 at 1114

> *… 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.* [133]

This reservation had been proposed by the Alliance of small Island states for inclusion in the Convention itself during the negotiations, but was not included in the final document. [134]

3.3. Assessment of the climate change regime

In the 18 years since the finalization of the Convention, it has achieved virtual universality; it has now 192 parties. [135] Moreover, the Convention has also laid down the basis to build up on and provided the parameters which the parties should consider in subsequent negotiation of legal instruments. The drawback of the convention is that it is a framework agreement that sets forth general and vague obligations whose binding status and enforceability is controversial. Even if to respond to this shortcoming, the Kyoto Protocol imposed more concrete obligations on developed states to reduce their GHG emissions by quantified amount during 2008-2012, it is affected by several constraints. The most important barrier to the Kyoto Protocol is the decision by the United States (responsible for approximately one quarter of the world's emissions) not to become a party to the protocol. [136] Furthermore, developing states lack any emissions – reductions obligations even if larger developing states such as China and India are among the worst emitters of GHGs but have no reduction commitments. [137] Furthermore, the Kyoto Protocol was not designed to solve the problem of climate change and as a result, the reductions envisaged are inadequate as the emission reductions were not made in accordance with emission cuts recommended by best scientific information and assessment and hence it will not by itself solve the problem of climate change; this is because even if the Kyoto Protocol is faithfully implemented by all industrialized nations

[133] *Id.*
[134] *Id.*
[135] David Freestone, *Supra* note 91 at1
[136] P. BIRNIE AND A.BOYLE ,*Supra* note11 at533
[137] *Id.*

as agreed, it would only have modest impact in stabilizing GHG emissions. [138] Climate researchers have estimated that full implementation of Kyoto would reduce projected warming in 2050 by only about one – twentieth of one degree Celsius. [139] By contrast, stabilization of atmospheric GHGs at levels that produce no more than a2-3^{0}c increase in temperatures from pre-industrial levels which many climate experts cite as a critical threshold for serious impacts will require the world community to reduce GHG emissions by 60-70 percent by 2050. [140] Moreover, industrialized countries might have to reduce their emissions by as much as 80 percent by the middle of the century if developing nations are to be permitted some growth in their emissions levels. [141] In light of those facts it is obvious to see the modest role of the Kyoto protocol in tacking climate change. Even if it is a well accepted fact that further climate change is inevitable despite significant mitigation commitment, it is possible to foresee significant further climate change in light of the weak commitments envisaged by the climate change regime.

It is also discussed above that the adaptation commitments meant for direct damage prevention purpose are also affected by vague commitments and inadequate funding mechanism and as the result, significant loss and damage become unavoidable, posing tremendous trouble on vulnerable countries. What become more problematic for particularly vulnerable countries is that the climate change regime has no regulatory response to unavoided and unavoidable damage, and does not address how losses from those two types of damage should be borne. [142] While it has been said that Article 4.4 'amounts to an implicit acceptable by developed country parties of responsibility for causing climate change', [143] the climate regime lacks rules on when and how unavoided and unavoidable damage should be compensated. This is a clear gap in the regime that remains to be filled.

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[138] William C.G. Burns, Potential Causes of Action for Climate Change in International Fora: The law of the Sea Conventions, at 30, available at http://www.usasurvival.org/docs/burns.pdf last visited on 13July ,2010
[139] *Id.* at 31
[140] *Id.*
[141] *Id.*
[142] Roda verheyen and peter Roderick, *Supra* note 38 at13
[143] PHILIPPE SANDS ,*Supra* note 131 at101

3.4. The International Legal Regime of Liability for Transboundary Environmental Damage

Since the climate change regime does not deal with the issue whether and how the industrialized countries that are most responsible for the GHG emissions should repair the damage inflicted against impacted victims due to climate change, it is necessary to resort and consult how international law on liability for transboundary damage bears upon the issue. The International community has committed itself to increasing efforts to develop international law on liability and redress for the victims of transboundary damage. In 1972, states committed to develop international law on liability and compensation for environmental damage. [144] Moreover, in 1992, the Rio declaration also reiterated the call of the 1972 by stating that:

> *States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.* [145]

Since states have agreed to increase their efforts in this regard, transboundary environmental harm has been on the agenda of the International Law Commission (ILC) since 1978 under the title of 'Liability for Injurious consequences of Acts not prohibited by International Law." [146] International liability differs from state responsibility in that the latter is dependent upon breach of international law, while the former constitute an attempt to develop a branch of law in which a state may be liable which is in itself not contrary to international law. [147] However, the works of the Commission on the topic has

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[144] The 1972 Stockholm Declaration on the United Nations Conference on the Human Environment(herein after Stockholm declaration), at principle 22.

[145] The 1992 Rio Declaration on environment and Development on the United Nations Conference on Environment and Development(herein after Rio declaration), at principle 13

[146] P. BIRNIE AND A.BOYLE, *Supra* note 11 at105. ILC was established as a subsidiary organ of the UNGA with the objective to "promote and progressively develop International Law and its codification" See the Statute of the International Law commission, at Art. 101

[147] Malcolm N.Shaw, INTERNATIONAL LAW (4th ed. Cambridg University Press,1997) at597

frequently been misconceived and controversial. Its theoretical basis and separation from state responsibility have been questioned.

> *The apparent distinctions which the Commission has drawn between state responsibility and international liability are in many cases implausible. It is difficult to resist the conclusion that much of what the commission is now proposing could be conceptually contained within a regime of obligations whose breach entailed state responsibility. "Liability", like "responsibility", is now used by the commission to refer to obligations and the consequences of their breach; the primary obligations of notification, consultation and harm prevention are acknowledged to exist in customary law and to carry responsibility for breach; the notion that activities incurring responsibility for harm are unlawful and prohibited can be seen as misconceived and over simplified.* [148]

Even if the earlier work of the commission was affected by misconception, the 1996 draft articles were relatively claimed to be more advanced work. [149] There were three elements in this draft: prevention, cooperation and strict liability for damage. However, even this work of the commission was not free from controversy and uncertainties. [150] To sum up, the whole topic of liability has remained controversial through out its history and the ILC's attempt to develop a regime of international liability applicable to activities involving the risk of significant transboundary harm become unsuccessful. Due to the continued reluctance of states to proceed with controversial topic, the commission declared in 1997 to separate its articles on liability from those on prevention of environmental harm and to postpone work on the latter. [151] Accordingly, in 1998, draft articles on prevention of transboundary harm and cooperation were adopted and referred for governments for comment. An amended draft convention on the prevention of Transboundary Harm from Hazardous Activities was adopted in 2001 and recommended to the UNGA. [152]

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[148] A.E. Boyle, *State Responsibility and International Liability For Injurious Consequences of Acts Not Prohibited By International Law: A Necessary Distinction*?,39 INT'L AND COMP. L. Q.1,22(1990)
[149] P. BIRNIE AND A.BOYLE ,*Supra* note 11 at105
[150] *Id.* at189-190
[151] *Id.*at 106
[152] *Id.*

As the result, currently there is no comprehensive legal regime put in place to regulate liability for all transboundary damage under international law. However, this does not mean that there is no international law on liability and compensation for transboundary damage. The international community has established regimes to prevent transboundary pollution and then followed and supplemented these with treaties to address liability and compensation where pollution damage nevertheless occurs. Examples of liability and compensation convention include the following.

- Space objects – The 1972 Convention on International Liability for Damage Caused by Space Objects.
- Oil spills – The 1992 civil liability convention (CLC 92) and the 1992 fund convention [153] address risks and damage relating to oil spills from marine transport
- Nuclear damage – The nuclear damage conventions [154] address risks arising from the peaceful use of nuclear energy.
- International water courses – The water courses and Industrial Accidents protocol [155] provides that operators of industrial installations are strictly liable for damage caused by their activities on international water courses.
- Hazardous substances – The Hazardous and Noxious Substances (HNS) convention [156] address risks and damage relating to the transportation of dangerous and hazardous goods.

[153] The 1969 International convention on Civil Liability for Oil Pollution Damage and the 1971 International Convention on the Establishment of an International Fund for compensation for oil solution damage are now been supplemented by the CLC 92 and the 1991 Fund Convention.
[154] The OECD's 1960 Paris Convention on Third party liability in the Field of Nuclear Energy, as amended by the 1963 Brussels supplementary convention, and the IAEA's 1963 Vienna convention on Civil Liability for Nuclear Damage which are linked by a 1988 Joint protocol relating to the Application of the Vienna convention and the parts convention. In 1997, over 80 states adapted a protocol to Amend the 1963 Vienna convention and also a 1997 convention on supplementary compensation for nuclear Damage, A 2004 protocol to Amend the Pairs convention are a 2004 protocol to Amend the Brwsels supplementary convention have also been adapted.
[155] 2003 protocol on civil Liability and Compensation for damage caused by the Transboundary effects of Industrial Accidents on Transboundary waters
[156] The International Convention on Liability and Compensation for Damage in Connection with the Carrage of Hazardous and Noxious Substances

- Environmental damage – the Lugano convention [157]is a regional treaty adopted under the a suspires of he Council of Europe that address liability and redress for environmental damages due to dangerous activities regardless of whether it has a transboundary dimension.

The above examples demonstrate that liability and redress rules already well developed in international environmental law. In the absence of a binding treaty, affected states and private citizens would bear the costs of risky activities. Ensuring prompt and adequate compensation for private and public victims of transboudary pollution is thus a central goal of these liability and redress regimes.[158] However, due to the failed attempt to develop comprehensive environmental liability regime at the international levels, stales have indeed privileged the development of specific liability regimes in the context of individual treaties. They have therefore emphasized the development of sectoral liability regime over general rules for environmental liability, which is consistent with the sectoral manner in which international environmental law has developed over the past several decades. [159] Therefore, the regimes that exist are sectoral. There is currently no liability and neither redress regime that can be directly applied to climate change nor existing international liability regimes are applicable in the case of climate change.

[157] 1993 convention on Civil Liability for Damage resulting from Activities Dangerous to the Environment. This convention has not yet come into force even though it was adapted more than ten years ago.
[158] Roda verheyen and peter Roderick, *Supra* note 38 ,at25
[159] Philipe Cullet, Liability and Redress for Human-Induced global Warming: Towards An International Regime,26A/43ASYMPOSIUM: CLIMATE CHANGE RISKS 99,114(2007)

CHAPTER FOUR

Searching for International Legal Obligation whose Breach Lead to State Responsibility: The Legal Option for Particularly Vulnerable Countries

As it is discussed in chapter two the existing climate change regime does not contain provision or mechanism that deal with climate change damages or that address how climate change damage should be compensated whenever they occur. We have also seen the failed attempt by the international community of devising a comprehensive liability regime for transboundary environmental damage. In face of these situation, the particularly vulnerable countries have been routinely asserting that they are justified in seeking compensation from those most responsible for GHG emissions simply because they are being harmed or vulnerable to be harmed significantly due to significant GHG accumulation in the atmosphere generated by developed countries. Indeed in international law, states are responsible for violations of public international law and are obliged to compensate the indirectly or directly affected states for the damage caused. [160] The option that remained for particularly vulnerable countries are therefore to search for and identify whether there is an international obligation that the worst emitters assumed whose breach establish their responsibility. Therefore, we now proceed to look at customary international law and specific treaty provisions which could serve as the basis for showing that a state has done wrong or acted negligent, an important element of state responsibility, to find the responsibility of heavy emitting states.

4.1. Steps to Hold States Responsible for Climate change Damage

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'. [161] The GA then requested that the ILC codified the law on state responsibility in 1953. [162] This task led to the adoption of the ILC Draft Articles on the Responsibility of states for Internationally

[160] Richard S.J. Tol and Roda Verheyen ,*Supra* note 127 at 1111
[161] The Statute of the International Law Commission, at Article 1.1
[162] UNGA Res. 799 (VIII), 7 December 1953

wrongful acts in August 2001. The drafts of the ILC are not formally binding on any state. The UNGA 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. [163] To sum up, while the rules developed by the ILC do not automatically represent international law but have to be accepted (e.g. ratified) by states, they can serve as a useful tool to examine the conditions and consequences of state responsibility for climate change damage. According to the 2001 draft articles, the general procedure for establishing state responsibility for damages involve the following steps: the existence of an international obligation owed to the states that suffered damage, the breach of this obligation, attribution of damaging activities to state and establishing a causal link between the activities and the damage. [164] Let's see the fulfillment of these steps with respect to climate change damages.

4.1.1. An International Legal Obligation not to Cause Climate Change Damage

Generally, international obligations can be found in either treaty law or customary international law. In climate change context, the no-harm principle belongs to the category of customary international law, whereas the UNFCCC and Kyoto protocol, as well as other treaties such as the 1982 UN Convention on the Law of the Sea are relevant sources of obligations that belong to the category of treaty law.

4.1.1.1. Climate Change Regime

Treaty law is the main source of obligations in international environmental law, containing much more defined rules as well as differentiated obligations regarding implementation control and enforcement-elements that are largely lacking for rules of customary law. [165] It is stated earlier that the UNFCCC and the Kyoto protocol are the relevant treaties in the context of climate change damages. The central question is whether they contain duties of state conduct that can be breached i.e. the obligation of states to avoid damages. In other words, the question that arises is whether the UNFCCC

[163] UNGA Res. 56/83, 28 January 2002.
[164] Draft Articles on Responsibility of States for Internationally Wrongful Acts ,
International Law Commission, G.A. Res. 56/83, Annex, U.N. Doc. A/56/10(SUPP) (Dec. 12,
2001) [hereinafter Articles on Responsibility of States].
,See at Article 2&ff,And see also Richard S.J.Tol& Roda Verheyen,*Supra* note 128 at1111
[165] Richard S.J. Tol and Roda Verheyen ,*Supra* note 128 at1114

and Kyoto protocol contain direct obligations regarding climate change damages that would give rise to a claim for reparation under the traditional law of state responsibility. Now the writer is going to carefully scrutinize the leading climate change treaties to identify obligations that could give rise to state responsibility when breached. In doing so, the writer gives particular attention to the UNFCCC, as indicated above it has got near universal ratification and also the commitments contained in it suggest that there is a legal duty to avoid CCD unlike Kyoto protocol. Kyoto protocol may not serve much to that end because naturally, for a state to breach an international obligation, the treaty containing this obligation must be in force in the state at the time of the breach. Therefore, large emitters of GHGs which have not ratified the Kyoto protocol, such as the USA, China and India do not have any reduction obligations and cannot be held responsible for non compliance with the reduction targets under the protocol. Moreover, there is no relevant provision in Kyoto protocol regarding the obligation to avoid climate change damages.

It has been claimed that the UNFCCC, being a framework agreement, is merely setting out a shared vision of the common goals and interests of the international commonly; the signatory states are left with a significant degree of discretion to define specific rights and obligations. [166] Thus, it has been considered difficult to identify specific state obligations on the basis of general obligations enshrined in the UNFCCC. [167]

On the other hand, contrary to the above view, it can be argued that the worst emitters of GHG have assumed an obligation not to cause climate change damage by the UNFCCC. Article 2 of UNFCCC provides that the ultimate objective of the convention is:

> *To achieve, in accordance with the relevant provision of the convention, stabilization of a greenhouse gas emission 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 eco-systems to adapt naturally to climate change, to ensure that food*

[166] A. Okamatsu, Problems and Prospects of International Legal Disputes on Climate change, at5, available at http://www.sprep.org/att/irc/ecopies/countries/tuvalu/47.pdf Last Visited on 13 July , 2010
[167] *Id*.

> *production is not threatened and to enable economic development to proceed in a sustainable manner.* [168]

It is possible to interpret and operationalize the duty of preventing dangerous interference with the climate system in light of current scientific and legal standards of protection. Recent research translates dangerous anthropogenic interference with the climate system into a two degrees centigrade target. [169] This means that the increase in global average temperature (as an effect of the interference with the climatic system) above two degrees centigrade compared to the pre-industrial average temperature will have dangerous implications for human welfare. [170] The two degrees centigrade target can currently be translated into an atmospheric concentration target of 450 ppm (parts per million) CO_2 equivalent by 2150. In addition, Article 4.2 of a UNFCCC can be interpreted as entailing a concrete obligation for Annex I (industrialized parties) to reduce their GHG emissions, which complements the objective.

> *Each Annex I party shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emission of greenhouse gas and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the convention.* [171]

Therefore it is possible to argue that Article 4.2 UNFCCC in conjunction with Article 2 obliges parties to take action to adopt policies and measures to secure the stabilization of atmospheric concentration of greenhouse gases. These two Articles could, therefore, be understood as a primary rule that when breached establishe a wrongful act. Such a breach is committed where a state is taking no or insufficient measures to modify upward emission trends.

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[168] UNFCCC, *supra* note 5 at Article 2.
[169] The Copenhagen Accords, Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2009, FCCC/CP/2009/11/Add.1,Decision 2/CP.15 at Para. 2.
[170] *Id*.
[171] UNFCCC, *supra* note 5 at Article 2.

This argument can also be supported by reference to Article 18 of Vienna Convention on the Law of Treaties (VCLT).state parties have the legal obligation not to 'defeat' the objective of any treaties it accepted [172] i.e. engage in activities that will impede the achievement of Article 2 UNFCCC; no taking measures to modify emission trends, however, defeats the objective.

The following legal arguments can, therefore, be extracted to support the conclusion that Article 2 in conjunction with Article 4.2 UNFCCC places a duty on Annex I parties to implement effective measures that would lead to a reversal of long-term emission trends. First, all parties are committed to the stabilization targets and are bound by an obligation of conduct to prevent dangerous climate change under Article 2 UNFCCC. According to Art. 18 VCLT, this target shall not be defeated. There is high probability of significant, even disastrous, harm as a consequence of not staying within the target (450ppm CO2 equivalent concentration limit). Staying within this limit, however, entails a substantive emissions reduction globally (80-90 percent), as climate science clearly confirms. Second, Annex I parties are specially committed under Article 4.2 UNFCCC to implement policies and measures which correspond to this obligation.

In summary, if an Annex I party has increased its emissions continually since its ratification of the UNFCCC, this would amount to a breach of treaty. Nevertheless, this continues to be a controversial topic because others view the UNFCC's provisions as nonbinding, vague and aspirational in nature. [173]

4.1.1.2. Customary International Law: No-Harm Rule

Article 38 of the Statute of the International Court of Justice (ICJ) defines customary international law as 'evidence of general practice accepted as law', and the ICJ has stated that customary law arises when a practice among nations is extensive and virtually

[172] Timo Koivurova, *International Legal Avenues to Address the Plight of Victims of Climate Change*: *Problems and Prospects,* 22 J.ENVTL. L. &LITIGATION 267,275(2007)
[173] Jennifer Kilinski, . *International Climate Change Liability: A Myth Or A Reality,*18J. OF TRANSNATIONAL LAW&POLICY 377,389(2009) and see also supra note 90, at524-526.

uniform and is accompanied by a conviction that it is obligatory under international law (opinio iuries). [174]

Customary international law also contains primary rules that in the case of a breach that gives rise to state responsibility. The most important rule applicable in the context of climate change damages is the rule of prohibition of transboundary environmental damage, the so called no-harm rule. Under customary international law, states are under obligation not to inflict damage on or violate the rights of other states. [175] In environmental law, this obligation has been translated into the obligation not to cause harm to the environment of other states and to areas beyond national jurisdiction. [176]
This rule was most famously used in the 1938-1941 Trail Smelter Arbitration case: The tribunal concluded:

> *Under the principle of international law … 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 state or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.* [177]

While the case focused on the pollution of US territory from a smelter in neighboring Canada, the no-harm rule now extends to relations between all states, however distant, and has also extended its scope to areas beyond a state's jurisdiction. [178] The no-harm rule is also enshrined in principle 21 of the Stockholm Declaration and principle 2 of the Rio declaration which provide: 'states have, the sovereign right to exploit their own resources pursuant to their own environmental and developmental 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

[174] See North Sea Continental Shelf Cases (West Germany V. Netherlands; West Germany V. Denmark), 1969 ICJ Report, at Para 43-44. See also the Nicaragua Case, 1986 ICJ Reports, at Para. 97-100 and 106-109
[175] Richard S.J. Tol and Roda Verheyen ,*Supra* note 128,at1110
[176] *Id*.
[177] Trail Smelter Arbitration of 1941 (USA V. Canada), Reports of International Arbitral Awards (RIAA), vol. III, at Para. 1905
[178] P. BIRNIE AND A.BOYLE , *Supra* note 11 at111

jurisdiction.' [179] Moreover, it has frequently been referred to by international courts and tribunals. For example, the International Court of Justice in Nuclear weapons and *Gabcikovo-Magymaros* case confirmed that the 'general obligation of states to ensure that activities within their jurisdiction and control respect the environment of other states or of areas beyond national control is now part of the corpus of international law relating to the environment.' [180] Moreover, it has also been reiterated in the preamble of the UNFCCC. [181]

Nevertheless, a customary rule as a primary obligation has the disadvantage of the rule's vagueness, which makes it difficult to determine its exact content. Does the rule relate to the harm caused, which means that transboundary harm as such is prohibited, or does it relate to specific activities which would cause harm? The answer entails different consequences. If harm from whatever source or activity is prohibited, then the nature of the activity is irrelevant. If, on the other hand, state responsibility depends on whether a specific activity is allowed or prohibited, then the question of how to deal with activities not prohibited by international law has to be addressed. We have seen earlier that (chapter two) the ILC had attempted to address the latter in its '2001 Draft Articles on prevention of Transboundary Harm from Hazardous Activities.

However, if the no-harm rule is not about whether the relevant activity as such is unlawful but whether the home state has done everything in its means to avoid causing transboundary harm, then the approach by the ILC seems to be fundamentally misconceived. The second alternative-that harm per se is prohibited-seems to be preferable because this view is in line with international jurisprudence, for example, the smelting of ore in the Trial Smelter case was not prohibited as such. [182]

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[179] Rio Declaration,Supra note 145 at principle 21
[180] Advisory opinion of the ICJ in the legality of the Threat or Use of Nuclear Weapons, 1996 ICJ Reports 241, Para. 29. The 'no-harm rule' was also restated in the Gablikovo Case, 1997 ICJ Report 7, at Para. 41
[181] UNFCCC, *Supra* note 5, preamble, Para. 9. It is also contained in the 1992 Biodiversity Convention, Art. 3j the 1985 Vienna Convention for the protection of the Ozone Layer, preamble, at Para. 2.
[182] P. BIRNIE AND A.BOYLE ,*Supra* note11 *see* at 114 and 182

In summary, it can be said that despite the lack of a detailed definition and sparse use by international courts, no-doubt the no-harm rule is part of customary law. This rule contains an obligation not to cause harm, to prevent foreseeable risk of damage and to minimize the risk thereof; in the case of actual harm the rule also entails the obligation to compensate states that are directly or indirectly affected. [183] Both avoidable and unavoidable climate change damage fall within the ambit of legal consequences of a breach of the no-harm rule, so that financing and implementing adaptation measures-as addressed in the climate regime – are just as much legal consequences of a breach of international law as the provision of compensation for loss and damage. Still this rule entails a qualification. International law attempts to balance the territorial sovereignty and the territorial integrity of states. For this reason, the no-harm rule has been restricted in scope. Not all types of damage must be prevented, only significant or even serious damage. [184] The ILC defined the term 'significant damage' as something more than detectable or appreciable, but not necessary serious or substantial. [185] The IPCC Fourth Assessment Report shows that the impact of climate change entails significant damages to the environment, caused by land slides, droughts, floods, storms, sea level rise, etc, and to human health and property.

4.1.1.3. United Nations Convention on the Law of the Sea (UNCLOS)

The damages caused by climate change concern virtually every aspect of life. The worst GHG emitters may damage the marine environment, the biodiversity of nature, etc – all of which are protected by various international rules and regulations. But the writer under this section for the interest of manageability and time constraints opted to discuss only how countries suffering from climate change damages could also resort to the UNCLOS to hold the worst GHG emitters liable.

The world community, after acknowledging the perils faced by all areas of the globe's oceans, opted to negotiate rules for all ocean areas, all uses of the seas and all of its

[183] *Id*. at 109
[184] *Id*. p. 123-124 and MALCOLM N.SHAW, *Supra* note 147 at598
[185] P. BIRNIE AND A.BOYLE ,*Supra* note 11 at 106

resources. [186] The Third United Nations Conference on the law of the sea convened in 1973 and culminated nine years later in the adoption of 'a constitution for the oceans', the UNCLOS. The UNCLOS entered into force in 1994 and currently has 148 parties. [187] UNCLOS is applicable because climate change damages the marine environment through sea level rise, increased shore erosion, penetration by sea water into freshwaters and ground water resources, damage to fish populations and fisheries, and coral damage due to increased surface and water temperature. [188]

The UNCLOS regulates both rights and duties of states with regard to the specific jurisdictional regimes of maritime zones and the protection of the maritime environment. When we pay attention only to the duties of states, it is evident that the customary no harm rule is incorporated in the UNCLOS. States are required to take "all measures necessary to ensure that activities under their jurisdiction and control are so conducted as to not cause damage by pollution to other states and their environment." [189] Thus, it is possible to say that Article 194.2 by setting forth no harm rule implicitly prohibits unlimited emissions of GHGs. Moreover, while the Convention recognizes the sovereign rights of states to exploit their natural resources, this must be done in accordance with 'their duty to protect and preserve the marine environment'. [190] Under the Convention, States Parties are required 'to prevent, reduce and control pollution of the marine environment from any source,' [191] including "the release of toxic, harmful or noxious substances, especially those that are persistent,..,[192] from land-based sources, (or) from or through the atmosphere ….". [193] Of course, GHGs obviously do not directly affect the marine environment, other than increasing the amount of CO_2 available for uptake even if rising water temperatures would have to quality as maritime pollution. However, the

[186] William C.G. Burns, *Supra* note 138at 37
[187] *Id*.
[188] Timo Koivurova, *International Legal Avenues to Address the Plight of Victims of Climate Change*: *Problems and Prospects,* 22 J.ENVTL. L. &LITIGATION 267,283(2007)
[189] United Nations Convention on Law of the Sea (hereinafter UNCLOS),10 December 1982,UN.Doc.A/CONF.62/121,21I.L.M.1261 ,at Art 194(2)
[190] *Id.* at art. 193
[191] *Id. at* art. 194(1)
[192] *Id*. at art. 194(3)
[193] *Id*. at art. 194(3) (a)

Convention adopts an expansive definition of the term "pollution" of the marine environment":

> *Pollution of the marine environment means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.* [194]

This demonstrates that UNCLOS define pollution broadly. Relying on this definition, it could be argued that indirect polluting activities such as emitting GHGs are covered, since this activity, over time result or is likely to result in such deleterious effects as harm to the living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate use of the sea. This is supported by the fact that stats explicitly addressed pollution from or through the atmosphere and that during the negotiations, states were aware of the potential threat of climate change to marine life. State responsibility is triggered when a state fails to fulfill the obligations under the Convention: 'states are responsible for the fulfillment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law." [195]

To sum up, the UNCLOS is a promising instrument through which action to hold state accountable for climate change damage might be taken. However, any action under the UNCLOS would face many challenges. For example, while the U.S. might appear to be the most likely state to be responsible (given its status as the leading producer of anthropogenic GHG emissions and its failure to ratify Kyoto), it is not currently a State Party to the Convention. [196] But some commentators have suggested that most provisions of UNCLOS now constitute customary international law and thus, it might be possible, for potential claimant party to invoke many Convention's provisions against the U.S. [197]

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[194] *Id*. at art. 1(4)
[195] *Id*. at art. 1(4)
[196] William C.G. Burns, *Supra* note138 at 44
[197] *Id.* at 45

4.1.2. Breach of Obligation: Failure to act with Due Diligence

We have seen above that the contention that the UNFCCC impose an obligation on states to avoid climate change damage is debatable, for there is a contrary view that the UNFCCC uses a hortatory rather than mandatory language. Therefore, the most important primary rule identified is the prohibition on causing transboundary harm (no-harm rule). Unlike the provisions of the UNFCCC, the no-harm rule is a well recognized rule whose applicability for climate change damage is not controversial, and is also applicable to all states. It is also stated earlier that the second step for establishing state responsibility is the breach of the obligation in force. Therefore, in this part we are going to see whether there is a breach by emitter of GHG the obligation under the no-harm rule. It is demonstrated that on the basis of no harm rule, states shall inflict no damage on other states. The question therefore is, whether inflicting any damage from climate change amounts to breach of the no harm rule.

There are three different standards to find breach and then the responsibility of states under the no harm rule. The first is fault-based responsibility. There are two different views regarding the meaning of fault-based responsibility. Some say that fault has subjective meaning requiring intention, recklessness or negligence on the part of the state or its agents, in addition to causing significant transboundary harm. [198] But the majority holds that fault has objective meaning which shows breach of an objective standard of diligent control of harmful activities. [199] According to this view unless the particular obligation violated itself incorporates subjective elements, no additional requirement of intention, malice, or recklessness on the part of the state is required. [200] Therefore, fault based responsibility refers to responsibility that arises, when due to failure to act in due diligence, a state cause a significant transboundary damage. The other two types of standard of responsibility are called strict and absolute responsibility and both of them

[198] P. BIRNIE AND A.BOYLE , Supra note 11 at185
[199] *Id.*
[200] *Id.*

give rise to the responsibility of state for mere fact of inflicting damage despite their minor difference.

> *…the concepts of strict and absolute liability have not been authoritatively defined, but standard of strict liability are less rigorous than absolute liability, and may constitute no more than a reversal of the burden of proof by allowing a defending state to establish circumstances precluding wrongfulness or liability. Absolute or objective liability on the other hand is more conclusive and prohibits, or even severely limits, evidence of circumstances preventing liability.* [201]

This paragraph demonstrate that in case of strict responsibility, the state accused of causing significant damage to other state may invoke circumstances precluding wrongfulness. But in case of absolute responsibility, no circumstances precluding wrongfulness is allowed. Obligation that could give rise to strict or absolute responsibility are called obligation of result. Therefore, when exactly an obligation is breached depends on the nature and character of the pertinent obligation.

When we come to the no harm rule even if strict standard of state responsibility for transboundary environmental harm enjoy some support as an exceptional principle applicable to ultra hazardous activities such as nuclear activities, outer space activities, but a general principle covering all sources of transboundary harm, international law place on the state only the obligation to 'make every effort' to avoid any damage, and, that is, only a due diligence obligation. [202] Therefore, the obligation under the no harm rule in general and the no harm rule reflected in Art 193 & 194 of the UNCLOS in particular are not an absolute obligation not to cause damage. The state could not be held responsible for mere occurrence of damage. Rather, they represent due diligence obligation. Thus, to breach the no harm rule, the state must fail to act with appropriate care when causing transboundary damage. In other words, the rule is a pure duty of conduct, and no intent to cause harm is needed. The significant question in this context is

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[201] L.D. GURUSWANY, . INTERNATIONAL ENVIRONMENTAL LAW IN NUTSHELL (1ST ed. St. Paul, Minn.: Thomson/West, 1997) at61

[202] L.D. GURUSWANY, W.R. PALMER AND H.WESTEN, GURUSWAMY, LAKSHMAN D., PALMER,SIR GEOFFREY W.R., & WESTON, BURNS H. INTERNATIONAL ENVIRONMENTAL LAW AND WORLD ORDER: A PROBLEM ORIENTED COURSE BOOK(West Publishing Co., St. Paul, Minn.,1994) ,at340. *see* also P. Birnie and A.Boyle , supra note 11 ,at113 and 185

how to define due diligence. Case law, state practice and the writings of jurists do not provide conclusive answers. [203] Therefore, each case must be judged on its merits. The term due diligence is a framework concept which must be given legal meaning for specific activities and risks. [204] In general, it has been described as the conduct that can be expected of a good government. [205] What constitutes the appropriate standard of care is, thus, determined by looking at a state's means and capacities at its disposal in an international context. [206] The ILC in its commentary to the 2001 Draft Articles on prevention of Transboundary Harm from Hazardous Activities noted that acting with due diligence requires that:

> *To take unilateral measures to prevent significant transboundary harm or at any event minimize the risk there of … such measures include, first, formulating policies designed to prevent significant transboundary harm or to minimize the risk there of and, second implementing these policies. Such policies are expressed in legislation and administrative regulations and implemented through various enforcement mechanisms.* [207]

Therefore, in terms of preventing climate change damages, acting with due diligence requires, at least, that climate policies and respective regulations are in place which aim at reversing the trend of ever increasing GHG emissions. There are three key criteria or elements discernible in writings and jurisprudence to determine compliance with the no-harm rule's standard of care called due diligence. These are

1) an opportunity to act
2) foreseeability of harm; and
3) Proportionality of measures taken to prevent harm.

These elements can be applied in the context of climate change damage.

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[203] P. BIRNIE AND A.BOYLE ,*Supra* note 11 at 113
[204] *Id*.
[205] *Id*. at112
[206] *Id*.
[207] *Id*. at113

4.1.2.1. An Opportunity to act

A state can only fail to exercise due diligence with respect to a specific prevention duty if it does not act where it otherwise could have. [208] In the context of climate change damage, almost every state has had the opportunity to take measures to prevent damage or to minimize the risk of damage. The IPCC's Fourth Assessment Report stated very confidently that one of the average net effect of human activities since the beginning of the industrial revolution has been a global warming. Therefore, every greenhouse gases which is not emitted into the atmosphere and every carbon sink preserved is an appropriate efforts to reduce the risk of damage. A particular legal challenge, in this respect, is that climate change is a matter of accumulation and multiple contributions; not one single state but the accumulated actions over a long time by many states are causing the increased radiative forcing and thus reduction efforts by one state would not effectively reduce the risk of harm. [209]

Acting with due diligence under the no-harm rule, however, does not require a state to guarantee that a certain harm will be prevented. [210] Due diligence is an obligation to make every effort to minimize the risk of harm. It requires a state to do the best it can in reducing the risks that result from climate change. Any of the highly emitting (industrialized) countries would be able to substantially reduce the risk, even if other nations continue to emit. To sum up, every state has an opportunity to act.

4.1.2.2. Foreseeability

The other criterion applied to determine compliance with due diligence requirements is that of foreseeability of harm.

A proper link between the omitted activity i.e. regulating GHG reductions, and the injurious consequence can be established if the state "actually knew or foresaw or ought to have known or foreseen that (its) individual conduct was or would be part of a composite cause bringing about inadmissible harm" [211]

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[208] Roda verheyen and peter Roderick, *Supra* note 38 at18
[209] *Id.*
[210] *Id.*
[211] ILA Report of the 64th Conference (1990)

There is, however, no requirement that the wrongdoer must have foreseen the precise magnitude or location of the injury; thus, a state is not required to have positive knowledge of the foreseeability of a certain situation, but it suffices that a state 'ought to have known the consequences. [212] This leads to an ease of the burden of proof. For example, in the Corfu channel Case, the International Court of Justice (ICJ) did not require that Albania know exactly which ships might be damaged by the mines; what was foreseeable was that damage would be caused to ships using the channel. [213] Accordingly, a state cannot simply argue that it did not know of certain facts if it could have or should have been aware of them. It is, therefore, considered sufficient that a state is able to envision the general consequences of an act or omission.

With respect to anthropogenic climate change, it is objectively known that an increase in GHG concentrations will lead to increased average temperatures, which will result in climate change damages. There is little place for states to argue that the likely impacts of increased GHG concentration were not foreseeable. To trigger prevention duties under the no-harm rule, i.e. to request a state to reduce its GHG emissions, the reference point for foreseeability is the point of time's best scientific knowledge. In the context of climate change, this is generally provided by the IPCC. Since the first report of the IPCC in 1990, there was almost uniform scientific consensus that human activities were interfering with the climate system and that damages would occur. In addition, all states that signed and ratified the UNFCCC in 1992 acknowledge that climate change was a real threat and of common concern to human kind. Therefore, even if, as it is discussed in chapter two, the possibility of man-made interference with climate system was first shown in 1827 by Jean Baptiste and subsequently by the Swedish scientist Svante Arrhenius, it has been foreseeable to all states since 1990 (at the latest) that damage due to climate change is brought about by interference with the climate system caused by anthropogenic emissions.

[212] Roda verheyen and peter Roderick, *Supra* note 38 at 19
[213] Richard S.J. Tol and Roda Verheyen ,*Supra* note 128 at1117

4.1.2.3. Proportionate Measures

If a state had the opportunity to act and ought have foreseen damage resulting from increased anthropogenic GHG concentration, what are- according to the due diligence standard - the measures it is required to take? This leads to the issue of proportionality .what measures a state is required to take has to be seen in relation to its national circumstances and to the risks involved. [214]

Determining whether a measure is proportionate requires balancing of legitimate interests. In other words, in order to determine whether a state has taken proportionate measures to prevent or minimize the risk of damage, the technical and economic abilities of the state controlling the activity must be balanced against the interests of the potentially harmed state to be protected against injury. [215] This involves, as stated earlier, the reconciliation of the territorial sovereignty of the emitting state with the territorial integrity of the injured state.

The starting point for the analysis of whether a country has taken proportionate measures would be data on historical emissions and/or contributions to warming, and whether changes or trends can be discerned that show the implementation of emission reduction measures. [216] Therefore, it would be necessary to consider each country's climate policies and evaluate individually whether the measures taken were proportionate and were based on the knowledge available to that country at a given point in time.

Since 1990, developed countries performance in reducing GHG emissions has differed widely. As a whole, GHG emissions from Annex I countries (excluding economies in transition) increased over the period 1990 – 2005 by 10% (including LULUCF) or by 11% (excluding LULUCF). [217] Sixteen Annex I countries had increased their emissions, and 24 had decreased their emissions. [218] It would seem that a prima facie case could be

[214] P. Birnie and A.Boyle , *Supra* note 11 at112-113
[215] Roda Verheyen & Peter Roderck ,*Supra* note 38 at20
[216] *Id*.
[217] *Id.*, 'LULUCF' means Land Use, Land Use Change and Forestry
[218] *Id*.

made that countries without a clear reduction or stabilization trend have not taken proportionate measures to prevent harm or minimize risks.

On the other hand, a stable or decreasing emissions trend would not alone be sufficient to indicate that proportionate measures have been taken by the relevant state. This is because:

> *For example, emission reductions by a state that have coincidentally resulted from the shut-down of industries (e.g., after the break-up of the former Soviet Union) could not, per se, be considered to be the result of that state having taken proportionate measures. Moreover, a stable or decreasing trend still involves emitting GHGs, and thus increasing the risk.* [219]

Thus, it would be necessary on a case-by-case basis to determine:

1) Whether the given country has considered taking measures in the face of the risk.
2) on what grounds possible GHG emission reduction measures were not taken, and
3) Whether part and existing policies constitute effective risk reduction measures, taking into account measures that should not have had an immediately destructive effect on a country's people, including the economy.

When assessed in light of these criteria, most Annex I countries have generated GHG emissions far in excess of what has been necessary to sustain their people and economies. [220] In other words many have failed to take proportionate measures in the face of this risk, instead continuing to generate excess emissions.

To sum up, the industrialized countries have failed to act in due diligence because that many developed countries have failed to take proportionate measures to prevent damage to other states resulting from domestic GHG emissions which they know, or should have known contributed to the risk of transboundary damage.

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[219] *Id.*at21

[220] *Id*., at22. Here different indices or methods have been suggested to determine whether proportionate measures have been taken by a specific state and these indices show that no proportionate measure were taken

4.1.3. Attribution of Damaging Activities to State

To establish state responsibility for climate change damages, it is necessary that legally relevant state behavior can be identified or that actions of private persons can be attributed to the state. [221] Emissions of carbon dioxide and other greenhouse gases are, due, in the most part, to the activities of individuals and private industries, coming from a multiplicity of sources such as industrial installations, traffic, households, farming practices, forestry, etc, and they are not attributable ipso facto to the state.

The action of private entities can be attributed to that of the state if the state in question failed to exercise due diligence in regulating individuals or private industries. That means a state may be held responsible for the actions of private actors within its borders in cases where a state fails to exert sufficient regulatory control over the activities within its jurisdiction to meet its international obligations. [222] In other words, a state is responsible for GHG emissions that originate within its borders, regardless of their source, if the state does not enforce a regulatory regime sufficient to curtail these emissions.

The institute of International Law proposed a regime of 'Responsibility and Liability for Environmental Damage and provides that:

> *Failure of the state to enact appropriate rules and controls in accordance with environmental regimes even if not amounting as such to a breach of an obligation, may result in its responsibility if harm ensues as a consequences, including damage caused by operators within its jurisdiction or control.* [223]

In climate change context, therefore, allowing emissions of GHGs per se or not having put in place the regulatory means to arrest emissions over and above a certain threshold are both clearly legally state actions or omissions and in this situation, the act of private entities would be attributable to the state. Therefore, greenhouse gas emission by private entities is attributable to the state because the majority of emitting activities are subject to

[221] Richard S.J. Tol and Roda Verheyen ,*Supra* note 128 at1111
[222] Teresa A. Berwick, . *Responsibility and Liability for Environmental Damage: A Roadmap for International environmental Regimes*, 10GEO. INT'L ENVTL L. REV.257,258(1997-1998)
[223] Francisco, Orrrego Vicuna, *Responsibility and Liability for Environmental Damage Under International Law: Issues and Trends* ,10GEO.INT'L ENVRTL L.REV.279,286(1997-1998)

a licensing or permit procedure, be it in energy or transport sector. Article 8 of the Draft Articles suggest that, as soon as an activity is permitted or licensed by a state (under the control of …), the resulting behavior is attributable to the state because states must exercise due diligence in control of private persons is an acknowledged principle. [224]

To argue that GHG emissions are not attributable to states would result in major inconsistencies. For example, it is undisputed that emissions from state-owned electricity plants or other industrial plant are attributable to the state. In some parts of the world, power plants are now fully privatized, in others the main CO_2 emitting sector is still under state direct control. There is no reason why international law would support exoneration of a state simply because of privatization of the polluting activity.[225] But more importantly, the discussion becomes academic if one accepts that monitory and regulation of private person's conduct is still a prime function of states, a function states can fail to fulfill with the appropriate care. Thus, as a result, at least the failure of state to stop, reduce or regulate emitting activities in its territory or control from any source with due care can trigger state responsibility.

4.1.4. Causation

In order to give rise to state responsibility it is further necessary to establish that there is a causal link between the activity and the occurring damage. It is useful here to distinguish between general causation and specific causation. The first type refers to a general link between increasing anthropogenic GHC emissions and climate change damage i.e. it concerns the general proof that anthropogenic GHG emissions change the radiative forcing in the atmosphere, which results in global warming, which then leads to impacts on ecosystems such as air temperature rise, sea level rise, shift of climatic zone, etc. [226] The following scientific facts can be taken as given and will satisfy the requirements for general causation. First of all, it is stated earlier that there is almost universal international scientific consensus that anthropogenic emissions of GHGs cause and have caused changes in the radiative forcing balance in the atmosphere, which causes climate

[224] Richard S.J. Tol and Roda Verheyen ,*Supra* note 128 at 1112
[225] *Id.* at1112
[226] *Id.* at 1112

change. In other words, already observed changes are not just due to natural climate variability. Secondly, there is a high likelihood that global climate change will lead to impacts on ecosystems and human life. In fact, it is discussed in chapter one that the IPCC has already found that recent regional changes in temperature have had discernible impacts on many physical and biological systems and that the observed warming in the past 50 years has contributed significantly to global sea level rise. Moreover, IPCC has projected with high certainty the types of impacts likely to flow from climate change in Africa, Asia, Latin America, and small islands states (some of them are reproduced in chapter one). Lastly, it is also pointed out in chapter one that some damage will occur, regardless of reduction efforts undertaken by the international community.

The other type of causation is that of specific causation. It requires the proof that a specific activity causes a specific type of damage to put a figure to a claim and to link this to a particular state or it requires the proof that whether the particular damage suffered by one victim is effectively caused by CO_2 emissions from one particular source. [227] The impossibility of attributing emissions of a specific country to specific damages, due to the complex and cumulative effect of the diverse pollutants and polluters and the non-linearity of climate change, is problematic in this context. That means, the problem with damage from climate change is that it is diffuse and hard to trace back to any one particulars state's action. In the existing jurisprudence, partial causation has been sufficient to establish liability[228] .Hence it could be suggested that because of the cumulative causation of climate change, causation link between a particular damage and state should be established based on contribution of that state to climate change This is because as indicated in chapter one that there exist relatively clear estimates of different countries' relative contributions to absolute tones of GHG emitted globally. In this case the standard of proof applied in respect of causation may be crucial. The international jurisprudence in this respect differs and the test applied has ranged from "clear and convincing" [229] to "on the balance of probabilities". [230]What could be suggested here is

[227] *Id.*
[228]P. BIRNIE AND A.BOYLE ,*Supra* note 11 at
[229] Trial smelter arbitration, *supra* note 177
[230] Corfu channel ICJ Report , 1949 at17

that the precautionary principle may be used as a tool to lower the standard of proof in situations where the complexity of scientific facts leads to a degree of uncertainty[231].

4.2. The Applicability of the General Rules of International Law over Specially Regulated Climate Change

It is discussed that the international community has devised legal regimes such as UNFCCC and Kyoto protocol to specifically deal with climate change related problems. It is a well accepted principle that the existence of a special treaty law could exclude the applicability of rules of general international law between the parties, by the so called the lex speciali doctrine. [232] Therefore, in climate change damage context, recourse to the general rules of state responsibility and the customary no harm rule would be precluded in cases where there is a set of primary rules for climate change damage in the climate regime which are linked to the specific legal consequences of their breach. [233] If this is not the case, either the general customary law no-harm rule and the state responsibility rules could be applicable on specifically unregulated climate change damage or the special climate change regime could remain dependent on the rules of general law on state responsibility, at least as a residual source of redress for damages and enforcement of primary obligations.

Having these facts in minds, the question is therefore whether the existence of the UNFCCC and Kyoto protocol excludes the applicability of the rules of state responsibility and the legal duties under the customary no-harm rule with respect to climate change. The *lex speciali* doctrine is essentially a rule of conflict; however, there is no conflict between on the one hand the climate regime, and the no-harm rule and state responsibility rules on other hand. [234] The climate change regime has as its objective the stabilization of GHG concentrations in the atmosphere in order to protect the global

[231] P. BIRNIE AND A.BOYLE ,*Supra* note 11 at
[232] Roda Verheyen & Peter Roderck ,*Supra* note 38 at17
[233] The distinction between primary and secondary rules is that the former related to environmental obligation under international law and the latter to the legal consequences of the failure to comply. Francisco, Orrrego Vicuna, *Responsibility and Liability for Environmental Damage Under International Law: Issues and Trends* ,10GEO.INT'L ENVRTL L.REV.279,281(1997-1998)
[234] Roda verheyen and peter Roderick, *Supra* note 38 at17

climate system. It is not a regime specifically negotiated to address damage to specific states resulting from the impacts of climate change. Even if the stabilization of GHGs in the atmosphere is achieved, it is clear that some countries will suffer the adverse impacts from climate change.

An argument that a state could no longer rely on the no-harm rule after becoming a party to the climate treaties would require compelling support, as it would amount to an implicit loss of rights by operation of law. [235] However, it is demonstrated earlier that neither the scope of the climate treaties, nor the negotiation history nor parties' intent supports a replacement or waiver of the rules of customary international law. Hence, the rules of customary international law remain applicable to climate change damages.

Moreover, the Kyoto protocol establishes non-compliance mechanisms. The question is to what extent these rules are *lex speciali Vis a Vis* other rules of international law or whether the non- compliance system could exclude the application of international law on state responsibility. The compliance system under the Kyoto protocol provides for specific sanctions within the climate regime for failure to meet certain obligations, among them specific reduction targets. However this mechanism does not deal with the legal consequences for climate change damages and nothing in the Kyoto protocol can, therefore, be read as excluding the applicability of general international with regard to damages caused by climate change. [236]

4.3. Compliance with the Climate Regime: Defense to Reparation Claim?

To a large extent, the problem of climate change is being tackled by imposing GHG emission reductions through either general regulations and/or the issuance of specific permits to large emitters. The question is whether these permits have an influence on the liability issue, or can it be argued that as long as a state follows regulatory conditions, no finding of negligence in international liability is possible, or that large emitters would have a regulatory compliance defense?

[235] *Id.*
[236] Richard S.J. Tol and Roda Verheyen ,*Supra* note 128 at1115

This question is heavily debated in legal doctrine. Some argue strongly in favor of a regulatory compliance defense while others are strong opponents of such a regulatory compliance defense, arguing that it could completely reduce the effectiveness of environmental liability. [237] In the context of climate change damage, the question is, therefore, could a victim state still hold the defendant state liable even though the latter state has complied with its treaty obligations? It is argued that following the requirements from the Kyoto protocol is just a minimum that does not free an Annex I country from taking further measures if this would be necessary to meet another obligation-for instance, the obligation to prevent transboundary harm under customary international law. [238] This view is supported for the following reasons. First, it is indicated earlier that there is increasing evidence that even if all Kyoto protocol commitments are met, climate change would not be reduced in an effective manner and hence damages is inevitable. Moreover, the climate change regimes are not concerned with interstate climate change damage. Therefore, the general preposition that compliance with the protocol does not necessarily present a defense to liability claims seems reasonable. This view is in conformity with or supported by the practice of many domestic legal systems. [239]

In summary, this chapter has made clear that the general state responsibility for climate change damage can be established. Hence claims by particularly vulnerable developing countries against developed countries seeking compensation for climate change damages caused due to violation of their obligation under international law would have a firm basis in international law. However, this analysis has also shown that a state claiming compensation for damages on its territory resulting from changing climatic conditions will meet substantial challenges like proving specific causation, etc.

[237] S Michael G.Faure and Andre NollKaemper ,*supra* note 83 at151
[238] *Id.* at 152
[239] *Id.* at153-155

CHAPTER FIVE

The Legal Consequences of Establishing State Responsibility

Article 1 of the Draft Article on State Responsibility Provides that:

> *Every international wrongful act of a state entails the responsibility of that state*

Thus in order to establish state responsibility, a state must commit a wrongful act. It is stated in chapter three that the conduct of the state becomes wrongful only when the conduct of a state constitutes a breach of international obligations. Therefore, a state's breach of obligations not to cause damage, to prevent harm, or to minimize sufficiently the risk of harm occurring, would constitute an international wrongful act which entails the international responsibility of that state. The discussions in preceding chapters depict that the developed countries have breached the obligation under the non-harm rule and inflicted significant harm particularly on vulnerable developing countries. This is because developed countries have had the opportunity to act by reducing their emissions. They have known the effects of increased atmospheric GHGs concentration at least since the early 1990s, and long before that for many major emitters. Finally, they have failed to take proportionate measures to reduce excess emissions, remaining intransigent in negotiations for stricter emissions reductions. In fact, developed countries' emissions have risen at a greater rate after becoming aware of the importance of reducing emissions, posing an even more serious risk for particularly vulnerable countries. The question is therefore what are the legal consequences of establishing the responsibility of states for climate change damage?

5.1 Reparation as a Consequence

As every international wrongful act of a state entails the international responsibility of that state, new international legal obligations arise out of an international wrongful act. The first consequence is cessation. 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. [240] 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. [241] In context of climate change, thus, state is obliged to cease the wrongful act, i.e. regulate the effective reduction of GHG emissions, to prevent further damage and hence, in this context cessation corresponds with mitigation and adaptation obligation. Therefore, mitigation obligations can form the basis for state responsibility claims, as it is actually concerned with preventing a risk of damage from anthropogenic climate change by ceasing or reducing the act i.e. GHGs emissions – so as to prevent climate change damage from the source. [242] Since it is possible to establish the responsibility of the developed nations for climate change damage, then they are obliged to cease the wrongful act, i.e. to regulate the effective reduction of GHG emissions even if the reduction of GHG emissions or the restoration of sinks is not an exercise that can be accomplished in a short period of time. The other consequence is that the state is obliged to make full reparation for any injury caused. This principle is well established in international law. In the 1927 Chorzow factory case, the permanent of court of International Justice (PCIJ) stated:

> *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.* [243]

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 decision 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,*

[240] Draft Articles on responsibility of states,Supra note 164 at Article 30
[241] Report of ILC, UN doc. A/56/10,2001 at 89
[242] Richard S.J. Tol and Roda Verheyen ,*Supr*a note 128 at1113
[243] Factory at Charzow case, merits, Judgment, 1928, PCIJ ser. A, No. 17 at Para. 47

> *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 interactional law.* [244]

This approach is reflected in the 2001 Draft Articles on state responsibility which envisages that the reparation for the injury shall take the form of restitution, compensation and satisfaction. [245]

In cases involving climate change damages, it might in fact be physically impossible to restore the situation *ex ante*. Since most of adverse effects of climate change are unrealized future risk, the two appropriate remedies are acting to prevent further damage and compensation for already occurred damage. Therefore, both avoidable and unavoidable climate change damage fall within the ambit of legal consequence of a breach of the no-harm rule. [246] A state found in breach of the rule, as a priority, have to act to prevent further damage. This might include, for example, financing adaptation measures to avoid further loss and damage. Where measures are not taken swiftly or efficiently enough, compensation is due for damage that would have been avoided through adaptation, but which occurred as a result of, for example, a lack of financing due to that for legal purposes the obligation to directly prevent damage (in this case covering adaptation costs) corresponds with the obligation to compensate for any damage done. [247] Compensation would be the only possible redress for unavoidable damage such as loss due to sea level rise.

5.2. Compensable Harm

The adverse effects of climate change causes injury to persons, property and other environmental damage such as the destruction of coral reef, ecosystem changes, or destruction of biological diversity. However, only injury to persons and property had

[244] *Id.*
[245] Draft articles on responsibility of states,*Supra* note 146 at Article .34
[246] Roda verheyen and peter Roderick, *Supra* note 38 at24
[247] Richard S.J. Tol and Roda Verheyen, Supra note128 at1114

been considered as compensable damage excluding ecological damage. For example, in the Trail smeller case, the tribunal awarded compensation to the United States only for damage to land and property caused by emissions from a Canadian smelter. [248] Of course, the draft articles on state responsibility define injury as "including any damage whether material or moral" caused by the international wrongful act. [249] However, the obligation to make compensation is limited to financially assessable damage i.e. material damage. That means compensable damage includes financially assessable damage to the property and personnel of the state, and reasonable expenditures for remedying or mitigating damage deriving from international wrongful act. [250] This indicates adaptation costs as material or compensable harm. Compensable damage also includes damage suffered by its nationals, persons as well as companies. [251]

However, the approach to consider environmental damage as uncompensable is now become outdated. [252] For example, UN Security Council resolution 687, in 1991 imposing international liability on Iraq for environmental damage in Kuwait is an important precedent pointing in this direction. That is, this resolution provided a clear support for compensation for environmental damage by re affirming that Iraq was 'liable under international law for any direct loss, damages, including environmental damage and the depletion of natural resources … occurring as a result of its unlawful invasion and occupation of Kuwait".[253]

These previsions gave rise to intense dispute about compensation for damage to pure (no – marketable) environmental resources and for interim damages to those resources prior to restoration. [254] The United Nations Compensation Commission (UNCC) [255] ultimately held that these damages were compensable. One method used to measure the value of

[248] Trail Smelter Arbitration of 1941 ,*Supra* note 177 at Para. 3
[249] Articles on responsibility of states,*Supra* note 164 at Article 31 Para. 2
[250] Report of ILC ,*Supra* note 241 at 99
[251] *Id.*
[252] P. BIRNIE AND A.BOYLE ,*Supra* note 11 at121
[253] Security Council Resolution 687, UN Dc S/Res./687 (April 8, 1998),
[254] Daniel A.Farber, *Supra* note 69 at409
[255] Id., UNCC is established after the Iraq war by S.C. Res 687 to handle claims against Iraq for war – related damages.

resources was the cost of mitigation measures such as providing alternative resources, which was used as a way to measure the loss of ecosystem services. [256]

Of course, in cases concerning threat of, or actual damage to the environment, injured states have been awarded compensation to the extent that reimburse the injured state for expenses reasonably incurred in preventing or remedying pollution, or providing compensation for a reduction in the value of polluted property." [257] However, there seems to be growing international recognition that "environmental damages will often extend beyond that which can be readily quantified in terms of clean-up costs or property devaluation." [258] Thus, harm to "environmental values – biodiversity, amenity, etc – sometimes referred to as "non-use' values is as a matter of principle, no less real and compensable than damage to property, though it may be difficult to quantify." [259] Therefore, despite the general acceptance of ecological damage in international law, it is questionable whether such damage is capable of being measured by factual and objective standards.

5.3. Multiple Actors and uncertainty over apportioning responsibility

There is uncertainty, as to the apportioning of responsibility for climate change damages that stem from causal uncertainty problem due to that climate change damages are the result of multitude of emitters, emitting activities and emitted gases. When multiple actors cause harm, as the case of climate change damage, the critical question is the amount of damage for which the defendants collectively and individually should be held liable. The harm from climate change is indivisible. International law is not clear on how several states should be treated when they independently commit acts that contribute to an indivisible harm. Therefore, in the absence of an agreed approach in international law on the determination of the amount of damage for which specific state should bear in the issue of complex and cumulative causes, the most likely option is the recourse to principles found in domestic legal systems. When causal uncertainty exists, some legal

[256] *Id*.
[257] Report of ILC ,*Supra* note 241 at 101
[258] Daniel A.Farber, *Supra* note 69 at401
[259] *Id.*

systems adopt a kind of a threshold liability rule, which often amounts to an all-or-nothing approach. This means that the victim either gets full compensation if she can prove the causal link or no compensation at all if the court is not convinced of a causal relationship between wrongfulness and damage. [260] Other systems have an intermediate solution by applying proportionate liability rule. The result would be that GHG emitters are held liable for the climate change damage in proportion to the amount to which they contributed to the lost. [261] In practice, this would mean that if the probability that the victim's damage was caused by the injury's activity was forty percent, the victim would be compensated forty percent of her damage. This rule is relevant and could be applied for climate change damage because, as indicated in chapter one there is relative certainty about the extent to which states as entities contributed to emission of GHGs. That means even though the shares of contributions differ and only lead to the resulting damage in accumulation to date, the amounts of GHG emissions from different states are relatively well-known, the application of proportionate liability rule limits the uncertainty over both attributing specific emissions of a specific county to specific impacts (or harm) and the consequent uncertainty by assuming that the damage to the victim is proportional to the cumulative emissions level by a particular state.

The other related uncertainty is the question whether states will only be held liable for the amount of their own share or whether a joint and several liability rule could be applied . It could be argued that where multiple polluters are involved, or in situation of cumulative causation, each actor should only be held responsible for its 'share of the wrong'. But the shortcoming of this is the consequence that the victim has to bring a number of law suits. [262] As a result, it is argued that the principle of joint and several liability rule should be applied because the rule is a general principle of law recognized by major domestic legal systems and hence can be elevated to international law. [263] Therefore any country that is found to have infringed the no-harm rule could be held responsible for the entirety of the question, which the burden then on the country to seek contributions towards damages payable from other countries that have also infringed the rule.

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[260] Michael G.Faure and Andre NollKaemper ,*Supra* note 83 at160
[261] *Id.*at164
[262] *Id.* at166
[263] *Id.* at167

5.4. The Effect of Contributory Fault on Reparation Claim

Nearly everyone on the planet in some small way, contributes to the generation of GHGs. [264] In other words, in some situations, the injured parties will themselves have made significant contributions to causing climate change. Of course, this is unlikely to be true for the poorest communities, which lack the resources to produce high levels of GHGs. The question is, therefore, whether this contribution would be a ground to avoid reparation. This issue is regulated in Article 39 of the draft articles on state responsibility which states that where the claimant state has, through willful or negligent behavior, or omission, contributed to the injury, the extent of the reparation must be adjusted accordingly. [265] Contribution to the damage will, therefore, not lead to an exculpation of the wrongful act, but may limit accordingly the legal consequences flowing from it.

5.5. The Applicability of the Rule on Developing Countries in the Future

It is indicated in chapter one that the annual GHG emissions of major developing states – such as China, India -is exceeding that of most developed states. It may be argued that the larger developing states are also responsible for climate change damage due to their contribution to climate change. This argument could be defended on the grounds that: (i) their historical contributions or per capita emissions are negligible and (ii) the principle of common but differentiated responsibility would prevent them being subject to any compensation duty. [266] However, many current non-Annex I countries cannot be expected to undertake substantial emission reduction measures and hence in the future their cumulated emissions could be significant. This is particularly true for major developing countries such as China given their economic potential as well as GHG intensity. [267] Therefore, it is conceivable that in the future developing countries may also breach the no-harm rule and hence they may be held responsible for their future emissions, which cannot be excused by a lack of knowledge about the consequences or by some other defense. Therefore, the developing countries should take care not to act in breach of the no-harm rule.

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[264] Daniel A. Farber, *Supra* note 39 at1652
[265] Richard S.J. Tol and Roda Verheyen, *Supra* note 128 at 1118
[266] *Id*.
[267] Roda verheyen and peter Roderick, *Supra* note 38 at24

5.6. The way forward: Inadequacy of Adjudication and the need to Craft Negotiated mechanisms of Reparation for Climate Change Damage

As the preceding chapters show, there is a sound legal basis under customary international law rules for individual cases brought by states seeking compensation for damage and loss resulting from the impacts of climate change. Therefore, the particularly developing countries can rely on this legal basis to institute adjudication proceedings against developed countries. Nevertheless, each individual case would meet with a number of challenges. In many cases it is simply difficult to prove that particular damage has been caused from one particular source or by the actions of another state and consequently it also poses a difficulty of apportioning responsibility between the various countries that have acted in breach of the no-harm rule. Due to this difficulty, litigation proceedings would be likely to require specially-commissioned scientific investigation with attendant costs, for example in relation to causation and damage assessment which make adjudication inappropriate for vulnerable developing countries, especially in light of their limited capacity. [268] Moreover adjudication is inappropriate for vulnerable countries essentially because the inability of adjudication to produce a comprehensive compensation system. [269] Due to these challenges and drawbacks or due to the complexities of issues involved, adjudication could fail and hence it is inadequate to meet reparation needs of vulnerable countries. Therefore, instituting adjudication proceedings for individual cases by vulnerable countries should not be the path of choice. International law is based on the notion of cooperation and the avoidance of adjudication-where possible-in favor of diplomatic solutions. Adjudication proceeding for individual bilateral cases will be cumbersome and should not be necessary, given that the approach to dealing with environmental matters has shifted from the bilateral state responsibility paradigm to the establishment and strengthening of international co-operation. [270] Due to this, international law commentators forwarded the view that in order for the developed countries to fulfill their legal duty under the no-harm rule, a negotiated mechanism to address the unavoided and unavoidable loss and damage is likely to be the only

[268] *Id.*, at p. 20
[269] Daniel A. Farber, *Supra* note39 at 1649
[270] MALCOLM N.SHAW, *Supra* note147 at600

appropriate and practical solution to addressing climate change damage. [271] The negotiated mechanism could be either establishing special liability regimes [272] or by compensation scheme funded by states. [273] Of course, the current negotiations leave room to begin this discussion. Recognizing the existing regulatory gab or absence of a mechanisms that ensure or warrant compensation for climate change damage, in 2007, COP 13 created a unique opportunity to close the gap. The Bali Action plan arising out of the Bali conference which is called COP13 recognizes to consider ways to enhance implementation of the convention's obligation on adaptation, including insurance and funding. That means one category of elements expressly agreed for consideration is 'disaster risk reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable for the adverse effects of climate change'. [274] Another is 'risk management and risk reduction strategies, including risk sharing and transfer mechanisms such as insurance'. [275] This is one step forward and hence establishing reparation mechanism become promising.

May be the key issue to be considered here is that the question whether or how the issue of establishing reparation mechanism that address loss and damage from climate change was dealt with in the Copenhagen climate conference.

Since the Kyoto Protocol's entry into force in 2005, attention has focused on the question of what to do after 2012, when the Kyoto protocol's first commitment period ends. The Copenhagen conference, which met from December 7-19, 2009, had been intended as the deadline to resolve question as what to do after 2012 by establishing a full-fledged legal agreement that would be post-2012 climate regime. However, due to disagreement in the negotiations, what emerged is not a legal agreement, rather the Copenhagen Accord. The Copenhagen Accord is a political rather than a legal document and also is not a COP decision:

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[271] By Roda Verheyen & Peter Roderck, *Supra* note 38, and Daniel A. Farber, *supra* note 39 and 69
[272] See Roda verheyen and peter Roderick, *supra* note 38 at29 and the following
[273] See Daniel A. Farber, *supra* note 39 at1640 and the following, and *supra* note 69 at 407 and the following
[274] 1/cp.13, at Para. 1 (c) (ii)
[275] Id. at Para. 1 (c) (iii)

> *Since the conference of parties neither adopted nor endorsed the Accord, but merely took note of it, its provision do not have any legal standing within the UNFCCC process even if some parties decide to associate with the Accord.* [276]

In Copenhagen, conference of the parties (COP) failed to pass the high hurdle of unanimous consensus of the delegates which would have been required for a formal decision. With several member countries openly objecting to the document in the final decision, the delegates simply 'took note' of the Accord, which allows UNFCCC parties to acknowledge its existence. [277] By the end of February 2010, some 108 parties out of the 193 member countries of the UN have formally communicated their support for the Accord to the UNFCCC secretariat (including all major emitting countries). [278]

Key elements of the Copenhagen Accord include: a long-term goal of limiting climate change to no more than 2^0c, system of pledge and review for both developed and developing countries mitigation commitments or actions; and significant new financial resources. what is relevant for this discussion is that of the agreement on finance. The Copenhagen Accord devotes several paragraphs (Para. 8 to 10) to the issue of climate finance. In Copenhagen, the discussions about financial support revolved around the typical issues how much money, from what sources, and with what governance arrangements. The Copenhagen Accord addresses only the first of those issues, having the other two for future resolution. It creates a collective commitment for developing countries to provide "new and additional resources … approaching $30 billion in fast start money for the 2010 – 2012 period, balanced between adaptation and mitigation, and sets a longer-term collective 'goal' of mobilizing $100 billion per year by 2020 from all sources (public and private, bilateral and multilateral), but links this money to "meaningful actions and transparency on implementation (Para. 8). It calls for governance of adaptation funding through equal representation by developing and

[276] Lione Scholatek, Neil Bird and Jessila Brown, Where's The Money? The Status Of Climate Finance Post- Copenhagen, April 2010, Climate Finance Policy Brief vol.1, at 2, available at http://www.odi.org.uk/resources/download/4765.pdf last visited 14 September ,2010
[277] *Id.*
[278] *Id.*

developed country parties, but does not establish governance arrangement for finance more generally. Finally, if calls for the establishment of a Copenhagen Green Climate Fund (GCF) (Para. 10) as an operating entity of the UNFCCC's financial mechanism, as well as a High level panel to consider potential sources of revenue to meet the $100 billion per year goal (Para. 9), and provides that a significant portion of international funding should flow through the GCF (para.8).

Of course, even though states generally agree on the need for substantial new funding to help developing countries mitigate and adapt to climate change, they conceptualize this funding differently. The US and other developed countries see it as financial assistance linked to developing country mitigation commitments. [279] Developing countries in contrast, see it as payment of the carbon debt that they believe that developed countries owe for their historical emissions. [280] The views of developed countries demonstrate that they were not still in the position to expressly acknowledge that they are responsibility for causing climate change damage. That is why the Copenhagen Accord totally disregards the essential issues agreed in Bali Action plan to consider establishing of international mechanism that address loss and damage and hence there is no mention of the unavoidable loss and damage associated with climate change nor an international insurance mechanism, which are crucial issues for vulnerable developing countries. Thus, the Copenhagen Accord adds little substance to the state of debate of establishing international mechanism that addresses loss and damage associated with climate change. However, one could argue that only because these things are not addressed in the accord does not mean they are off the table of international negotiations. [281]

The establishment of an international mechanism to address loss and damage from climate change impacts has been a key demand in many climate change negotiation forums, including the Copenhagen conference by small Island Developing states, the

[279] Daniel Bodansky, *Supra* note 37 at7
[280] *Id.*
[281] Seven Harmeling, Sonkekreft, Sandeep Chamling Rai and Kit Vaushan, International Action on adaptation and climate change. What Roads from Copenhagen to Cancun? June 2010, Briefing paper, at14 available at http://www.odi.org.uk/resources/download/4765.pdf last visited 14 September ,2010

African group and other LDCs. [282] That is why the most recent negotiating text, published in mid-may 2010, including both insurance to extreme weather events and compensation for loss and damage to be issues to be considered in the subsequent negotiations such as that next 16th COP to be held in December 2010 at Cancun, Mexico. For example, Para. 8 provide two options for negotiation of the parties:

Option 1:

> *Establishes an international mechanism to address (social, economic and environmental) loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change …., including impacts related to extreme weather events and slow onset events, through risk management, insurance, compensation and rehabilitation;*
> *Decides to elaborate modalities and procedures for the international mechanism to address loss and damage for adoption by the conference of the parties at its six tenth sessions:*
> *Option 2:*
> *Agrees on the need to strengthen international compensation and expertise to address (social, economic and environmental) loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change …, including impact related to extreme weather events and slow on set events, including through risk management and insurance as appropriate;*
> *Requests parties to explore whether risk management mechanisms may need to be established or enhanced at sub national, national, regional and international levels, as appropriate.*[283]

These paragraphs show that option one is significantly stronger than option two because option two postpones the establishment of such a mechanism to the future. Since this issue is among controversial issues between developed and developing countries, agreeing and operationalizing such mechanism require relentless efforts. This is because for one thing there are a number of methodological challenges of how to specifically design such a mechanism. [284] Moreover, there is also concern by developed countries that

[282] *Id.* p. 22
[283] *Id.*p. 23
[284] *Id.*

this mechanism would lead to incalculable future costs, given the historical responsibility for climate change. [285] However, the developed parties can not deny their global responsibilities, given the real significant impacts of climate change on particularly vulnerable developing countries, and hence have to work towards addressing the problem in the climate negotiations.

[285] *Id.*

Conclusion and Recommendation

Today climate change i.e. global warming is real and has been primarily brought on by GHG emissions from developed countries. Climate changes that we are experiencing today are already causing or expected to cause significant adverse effects in different parts of the world. These adverse effects strike the planet in uneven manner. The scientific predictions of future effects depict that most of the severe consequences of climate change will hit the poorest nations even if they contributed virtually nothing or little to the occurrence of the problem and have limited capacity to take adaptation measures.

The concern over the impact of GHG emissions prompted the international community to adopt the United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto protocol that envision a combined effort of mitigation and adaptation for tackling climate change and its adverse effects. UNFCCC contains general rules that require all states, particularly developed states, to begin to slow down climate change and adapt to its adverse effects. However, the climate change regime provides an inadequate response to the mitigative and adaptive needs of particularly vulnerable counties. Even if UNFCCC is a major step in facilitating climate change negotiations, it lacks any binding commitments. While the Kyoto Protocol actually establishes binding commitments to reduce GHG emissions to specified target for developed countries, the problem is that commitments of emissions reductions have been relatively mild in comparison with the magnitude of the problem and those demanded by the scientific community to achieve stabilization of GHG concentration in the atmosphere. Thus, even if the mandated emission reductions were met, they would remain insufficient to avoid dangerous climate change. This is further exacerbated due to the fact that the USA, the largest single emitter, is not party to the Kyoto Protocol and the big emitters of the developing countries such as China, India, etc assumed no emissions reductions commitments. What is more, even if the developed countries undertook a commitment to finance adaptation activities in vulnerable developing countries, the adaptation funding commitments and architecture has been plainly inadequate to generate the funding needed to adaptation.

Hence due to the absence of stringent mitigation and adaption commitments, climate change is producing or expected to produce with high level of certainty significant loss and damage on particularly vulnerable developing countries. Given this information, the question that arises is whether impacted countries are justified under international law to seek compensation from those countries most responsible for the GHG emissions that have led to those impacts. What is the greatest limitation of the climate regime is that it lacks a framework to provide recourse to the vulnerable when damage become too severe for adaptation to be possible, or where there is unavoided or unavoidable damage due to inadequate mitigative and adaption measures i.e. the climate regime lack rules on when and how unavoided and unavoidable damage should be compensated. This is a clear gap in the regime that remains to be filled. Furthermore, despite agreement by the international community to exert effort to develop a liability and compensation regimes for transboundary environmental damage, there is no currently comprehensive international liability and redress regime nor existing sectoral international liability and compensation regimes are directly applicable on issue of climate change damage.

In international law, states are responsible for violations of public international law and are obliged to compensate the indirectly or directly affected states for the damage caused. In the face of regulatory gaps, the last option for vulnerable countries to find a legal basis that enable them claim compensation for climate change damage is, therefore, to search for and then establish the breach of an international obligation that prohibit causing of climate change damage. Therefore this thesis has principally investigated the question if and to what extent there may be a basis for inter-state legal obligation on climate change damage on which the seriously affected countries could rely to claim compensation.

In most cases, the basis for contentious litigation between states would be the alleged breach of an international obligation. The unjustified breach of such obligation-usually described as the commission of a wrongful act- between the state concerned results in state responsibility under international law. In order to successfully raise an inter state claim, the wrongful act must be attributable to the accused state and causally linked to any occurring damage. The breach of an international obligation can be derived from

international treaty or customary law and may be committed through an act or omission depending on the states involved in an international litigation. Treaty law relevant in this connection may include the UNFCCC &the Kyoto protocol, the UNCLOS or other multilateral agreement. The first primary obligation identified is that of Article 2 and 4.2 of UNFCCC. Even if it could be argued that Article 2 in conjunction with 4.2 of UNFCCC creates a specific obligation to prevent climate change damage, ambiguous and broad terminology creates uncertainty on its binding nature and enforceability and hence it is debatable. But even if the existence of the obligation not to cause climate change damage in climate regime is controversial, the writer however predominately suggests that a violation of international obligation could be based on the so called no -harm rule. The no harm rule is a widely accepted principle of customary international law whereby a state is duty bound to prevent, reduce and control the risk of environmental harm to other states. Therefore, the no-harm rule provides a firm foundation for pursuing reparation claim against the developed world. However, while it is generally possible to invoke state responsibility for climate change damages, a number factual or conceptual uncertainties exist and many crucial details still remain unsettled. The primary legal rules are vague and the majority of harm is yet to occur. There is multiplicity of actors involved in the failure to reduce GHGs,and different type of damages and non- linear causation all pose significant challenges to the traditional rules of inter- state claims .

Despite some legal, conceptual and factual uncertainty, however it is possible for vulnerable developing states to make a persuasive case for seeking compensation for climate change damage alleging violation of the no-harm rule against specific developed countries. However, adjudication proceeding for individual cases should not be the path of choice. International law is founded on notions of cooperation and the avoidance of adjudication where possible. A negotiated mechanism to address unavoided and unavoidable loss and damage is likely to be a far more appropriate and practical solution to addressing climate change damage. That means the solution for climate change damage should be collaborative in approach and comprehensive in resolution. However, in the presence of significant gaps in the international climate regime due to ineffective climate negotiations to fulfill its promises of avoiding dangerous climate change and providing adequate adaptation support, or in the risk of collapse of international

cooperation with respect to establishing international mechanism that address the issue of compensation for loss and damages associated with climate change, litigation will be the only option for vulnerable countries at least to prod legislative action or to exert pressure on developed countries to come to agreement to establish reparation mechanism. In the situation of ineffective negotiation, litigation or threat thereof on state responsibility for climate change damage would emphasize the urgency of the need to agree binding commitments on climate change and would put additional pressure on the negotiations process. A judicial decision on state responsibilities related to climate change may provide guidance to the negotiations process. Clear and authoritative findings in relation to the applicable principle reached as a result of argument and analysis could be useful in creating parameters for further negotiations and highlighting gaps in the existing framework. Adjudication or the likelihood of legal action against major emitting countries is increasingly high when reluctance to establish mechanisms that address climate change damage by developed countries coupled with the facts that the enormous scale of the impacts foreseen from GHG pollution and the particularly vulnerability of many developing countries to impacts, and advances in attribution science. The understandable reluctance of vulnerable developing countries government to challenge any of the donor nations in court may change once the impacts of climate change become even more visible and an adequate agreement remaining wanting. A lack of progress following the abject failure of the conference in Copenhagen may help to persuade a potential litigant. In this case, the particularly vulnerable countries could rely on those rules and precedents identified in this work to claim compensation from industrial countries for climate change damage. However, adjudication is not advisable so long as there is collaborative option. Collaborations between the victim of excess emissions and major emitters are necessary for both parties to address the practical and legal challenges of finding just solution to climate change damage. Both parties should strive to avoid divisive legal claims by acknowledging that under the circumstances their futures are best served through collaboration. In this regard, the Bali Action plan provides some glimmer of hope.

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